

**Characteristics of Health Education  
Among Secondary Schools —  
School Health Education Profiles, 1996**

**Multistate Surveillance  
for Food-Handling, Preparation, and  
Consumption Behaviors Associated  
with Foodborne Diseases: 1995 and 1996  
BRFSS Food-Safety Questions**

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
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Distribution by Racial/Ethnic Group	NCID	1988; Vol. 37, No. SS-3
Among Black & Hispanic Children & Women of Childbearing Age	NCEHC	1990; Vol. 39, No. SS-3
Behavioral Risk Factors	NCCDPHP	1997; Vol. 46, No. SS-3
Birth Defects		
B.D. Monitoring Program (see also Malformations)	NCEH	1993; Vol. 42, No. SS-1
Contribution of B.D. to Infant Mortality Among Minority Groups	NCEHC	1990; Vol. 39, No. SS-3
Breast & Cervical Cancer	NCCDPHP	1992; Vol. 41, No. SS-2
<i>Campylobacter</i>	NCID	1988; Vol. 37, No. SS-2
Chancroid	NCPS	1992; Vol. 41, No. SS-3
Chlamydia	NCPS	1993; Vol. 42, No. SS-3
Cholera	NCID	1992; Vol. 41, No. SS-1
Chronic Fatigue Syndrome	NCID	1997; Vol. 46, No. SS-2
Congenital Malformations, Minority Groups	NCEHC	1988; Vol. 37, No. SS-3
Contraception Practices	NCCDPHP	1992; Vol. 41, No. SS-4
Cytomegalovirus Disease, Congenital	NCID	1992; Vol. 41, No. SS-2
Dengue	NCID	1994; Vol. 43, No. SS-2
Dental Caries & Periodontal Disease Among Mexican-American Children	NCPS	1988; Vol. 37, No. SS-3
Developmental Disabilities	NCEH	1996; Vol. 45, No. SS-2
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Dracunculiasis	NCID	1992; Vol. 41, No. SS-1
Ectopic Pregnancy	NCCDPHP	1993; Vol. 42, No. SS-6
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Endometrial & Ovarian Cancers	EPO, NCCDPHP	1986; Vol. 35, No. 2SS
<i>Escherichia coli</i> O157	NCID	1991; Vol. 40, No. SS-1
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Hazardous Substances Emergency Events	ATSDR	1994; Vol. 43, No. SS-2
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Influenza	NCID	1997; Vol. 46, No. SS-1
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Death Rates, Blacks & Whites	NCEHC	1988; Vol. 37, No. SS-3
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Falls, Deaths	NCEHC	1988; Vol. 37, No. SS-1
Firearm-Related Deaths, Unintentional	NCEHC	1988; Vol. 37, No. SS-1
Head & Neck	NCIPC	1993; Vol. 42, No. SS-5

## \*Abbreviations

ATSDR	Agency for Toxic Substances and Disease Registry
CIO	Centers/Institute/Offices
EPO	Epidemiology Program Office
IHPO	International Health Program Office
NCCDPHP	National Center for Chronic Disease Prevention and Health Promotion
NCEH	National Center for Environmental Health
NCEHC	National Center for Environmental Health and Injury Control
NCID	National Center for Infectious Diseases
NCIPC	National Center for Injury Prevention and Control
NCPS	National Center for Prevention Services
NIOSH	National Institute for Occupational Safety and Health
NIP	National Immunization Program



Reports Published in *CDC Surveillance Summaries* Since January 1, 1985 — Continued

Subject	Responsible CIO/Agency*	Most Recent Report
In Developing Countries	NCEHC	1992; Vol. 41, No. SS-1
In the Home, Persons <15 Years of Age	NCEHC	1988; Vol. 37, No. SS-1
Motor Vehicle-Related Deaths	NCEHC	1988; Vol. 37, No. SS-1
Objectives of Injury Control, State & Local	NCEHC	1988; Vol. 37, No. SS-1
Objectives of Injury Control, National	NCEHC	1988; Vol. 37, No. SS-1
Residential Fires, Deaths	NCEHC	1988; Vol. 37, No. SS-1
Tap Water Scalds	NCEHC	1988; Vol. 37, No. SS-1
Lead Poisoning, Childhood	NCEHC	1990; Vol. 39, No. SS-4
Low Birth Weight	NCCDPHP	1990; Vol. 39, No. SS-3
Malaria	NCID	1997; Vol. 46, No. SS-2
Measles	NCPS	1992; Vol. 41, No. SS-6
Meningococcal Disease	NCID	1993; Vol. 42, No. SS-2
Mining	NIOSH	1986; Vol. 35, No. 2SS
Mumps	NIP	1995; Vol. 44, No. SS-3
National Infant Mortality (see also Infant Mortality; Birth Defects)	NCCDPHP	1998; Vol. 47, No. SS-2
<i>Neisseria gonorrhoeae</i> , Antimicrobial Resistance in	NCPS	1993; Vol. 42, No. SS-3
Neural Tube Defects	NCEH	1995; Vol. 44, No. SS-4
Nosocomial Infection	NCID	1986; Vol. 35, No. 1SS
Occupational Injuries/Disease		
Asthma	NIOSH	1994; Vol. 43, No. SS-1
Hazards, Occupational	NIOSH	1985; Vol. 34, No. 2SS
In Meatpacking Industry	NIOSH	1985; Vol. 34, No. 1SS
Silicosis	NIOSH	1993; Vol. 42, No. SS-5
State Activities	NIOSH	1987; Vol. 36, No. SS-2
Parasites, Intestinal	NCID	1991; Vol. 40, No. SS-4
Pediatric Nutrition	NCCDPHP	1992; Vol. 41, No. SS-7
Pertussis	NCPS	1992; Vol. 41, No. SS-8
Plague	NCID	1985; Vol. 34, No. 2SS
Plague, American Indians	NCID	1988; Vol. 37, No. SS-3
Poliomyelitis	NCPS	1992; Vol. 41, No. SS-1
Postneonatal Mortality	NCCDPHP	1998; Vol. 47, No. SS-2
Pregnancy Nutrition	NCCDPHP	1992; Vol. 41, No. SS-7
Pregnancy-Related Mortality	NCCDPHP	1997; Vol. 46, No. SS-4
Pregnancy, Teenage	NCCDPHP	1993; Vol. 42, No. SS-6
Rabies	NCID	1989; Vol. 38, No. SS-1
Racial/Ethnic Minority Groups	Various	1990; Vol. 39, No. SS-3
Respiratory Disease	NCEHC	1992; Vol. 41, No. SS-4
Rotavirus	NCID	1992; Vol. 41, No. SS-3
<i>Salmonella</i>	NCID	1988; Vol. 37, No. SS-2
School Health Education	NCCDPHP	1998; Vol. 47, No. SS-4
Sexually Transmitted Diseases in Italy	NCPS	1992; Vol. 41, No. SS-1
Silicosis		1997; Vol. 46, No. SS-1
Smoking	NCCDPHP	1990; Vol. 39, No. SS-3
Smoking-Attributable Mortality	NCCDPHP	1994; Vol. 43, No. SS-1
Tobacco Control Laws, State	NCCDPHP	1995; Vol. 44, No. SS-6
Tobacco-Use Behaviors	NCCDPHP	1994; Vol. 43, No. SS-3
Spina Bifida	NCEH	1996; Vol. 45, No. SS-2
Streptococcal Disease (Group B)	NCID	1992; Vol. 41, No. SS-6
Sudden Unexplained Death Syndrome Among Southeast Asian Refugees	NCEHC, NCPS	1987; Vol. 36, No. 1SS
Suicides, Persons 15-24 Years of Age	NCEHC	1988; Vol. 37, No. SS-1
Syphilis, Congenital	NCPS	1993; Vol. 42, No. SS-6
Syphilis, Primary & Secondary	NCPS	1993; Vol. 42, No. SS-3
Tetanus	NIP	1997; Vol. 46, No. SS-2
Trichinosis	NCID	1991; Vol. 40, No. SS-3
Tuberculosis	NCPS	1991; Vol. 40, No. SS-3
Waterborne Disease Outbreaks	NCID	1996; Vol. 45, No. SS-1
Years of Potential Life Lost	EPO	1992; Vol. 41, No. SS-6
Youth Risk Behaviors	NCCDPHP	1996; Vol. 47, No. SS-3
Youth Risk Behaviors, College Students	NCCDPHP	1997; Vol. 46, No. SS-6

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## Characteristics of Health Education Among Secondary Schools — School Health Education Profiles, 1996

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### Abstract

**Problem/Condition:** School health education (e.g., classroom training) is an essential component of school health programs; such education promotes the health of youth and improves overall public health.

**Reporting Period:** February–May 1996.

**Description of System:** The School Health Education Profiles monitor characteristics of health education in middle or junior high schools and senior high schools. The Profiles are school-based surveys conducted by state and local education agencies. This report summarizes results from 35 state surveys and 13 local surveys conducted among representative samples of school principals and lead health education teachers. The lead health education teacher is the person who coordinates health education policies and programs within a middle or junior high school and senior high school.

**Results:** During the study period, almost all schools in states and cities required health education in grades 6–12; of these, a median of 87.6% of states and 75.8% of cities taught a separate health education course. The median percentage of schools that tried to increase student knowledge on certain topics (i.e., prevention of tobacco use, alcohol and other drug use, pregnancy, human immunodeficiency virus [HIV] infection, other sexually transmitted diseases, violence, or suicide; dietary behaviors and nutrition; and physical activity and fitness) was >72% for each of these topics. The median percentage of schools that tried to improve certain student skills (i.e., communication, decision making, goal setting, resisting social pressures, nonviolent conflict resolution, stress management, and analysis of media messages) was >69% for each of these skills. The median percentage of schools that had a health education teacher coordinate health education was 33.0% across states and 26.8% across cities. Almost all schools taught HIV education as part of a required health education course (state median: 94.3%; local median: 98.1%), and more than half (state median: 69.5%; local median: 82.5%) had a written policy on HIV infection among students and school staff. A median of 41.0% of schools across states and a median of 25.8% of schools across

cities had a lead health education teacher with professional preparation in health and physical education, and <25% of schools across states or cities had a lead health education teacher with professional preparation in health education only. Across states, the median percentage of schools, whose lead health education teacher had received in-service training on certain health education topics, ranged from 15.6% for suicide prevention to 51.4% for HIV prevention; across cities, the median percentage ranged from 26.2% for suicide prevention to 76.1% for HIV prevention. A median of 19.7% of schools across states and 18.1% of schools across cities had a school health advisory council. Of the schools that received parental feedback (state median: 59.1%; local median: 54.2%), >78% reported receiving positive feedback.

**Interpretation:** More than 75% of schools have a required course in health education to help provide students with the knowledge and skills they need to adopt healthy lifestyles.

**Actions Taken:** The School Health Education Profiles data are being used by state and local education officials to improve school health education and HIV education.

## INTRODUCTION

School health education (e.g., classroom training) is an essential component of school health programs. In 1990, CDC developed an interim operational definition of health education that identifies eight elements of school health education: a) a documented, planned, and sequential program of health education for students in kindergarten through grade 12; b) a curriculum that addresses and integrates education about health problems and issues; c) activities that help young persons develop skills to avoid risk behaviors (i.e., tobacco use; alcohol and other drug [AOD] use; imprudent dietary patterns; inadequate physical activity; sexual behaviors that result in unintended pregnancy, human immunodeficiency virus [HIV] infection, or infection by other sexually transmitted diseases [STD]; and behaviors that result in unintentional and intentional injuries); d) instruction provided for a prescribed amount of time at each grade level; e) management and coordination by an education professional trained to implement the health education program in each school; f) instruction from teachers trained to teach the subject; g) involvement of parents, health professionals, and other concerned community members; and h) periodic evaluation, updating, and improvement of the health education program (1).

The importance of school health education in promoting the health of youth and contributing to the overall public health is articulated in *Healthy People 2000*, which includes nine objectives to be attained through school health education by the year 2000 (2). The Institute of Medicine (IOM) has also recognized the importance of school health education. In 1997, the IOM Committee on Comprehensive School Health Programs in kindergarten through grade 12 recommended sequential health education at all grade levels during elementary school and middle or junior high school; a required one-semester health education course at the secondary school level taught by qualified health education teachers (i.e., health education teachers with preservice training in health education) that includes effective, up-to-date curricula and emphasizes the six categories of risk behaviors identified by CDC; and preservice training in health education content and methodology for elementary school teachers (3).

In 1995, to assess the status of school health education within interested states and cities, CDC, in collaboration with state and large local education agencies, developed School Health Education Profiles. Data were collected for the first time in 1996, and subsequently, have been used by interested state and local education agencies to monitor characteristics of health education in the middle or junior high schools and senior high schools in their jurisdiction. The Profiles include data from a questionnaire completed by school principals and a questionnaire completed by each school's lead health education teacher. The lead health education teacher is the person who coordinates health education policies and programs within a middle or junior high school and senior high school. This report summarizes baseline data from the 1996 Profiles (principals' surveys were conducted in 35 states and 13 cities, and lead health education teachers' surveys were conducted in 34 of those states and the same 13 cities). As of the publication of this report, 1998 data are being analyzed and will be compared with the 1996 Profiles in a future surveillance summary.

## METHODS

### Sampling

The School Health Education Profiles employ systematic equal-probability sampling strategies to produce representative samples of schools serving students in grades 6-12 in each jurisdiction. In most states and cities, the sampling frame consists of all regular secondary public schools having at least one of grades 6-12. Some sites modify this procedure by inviting all schools, rather than a sample of schools, to participate.

### Data Collection

At each school, data are collected during the spring semester. The principal's questionnaire and the lead health education teacher's questionnaire are both mailed to the principal of each sampled school. The principal then determines who the lead health education teacher is and distributes the questionnaire accordingly. Participation in the surveys is confidential and voluntary. Responses are recorded on the questionnaire booklet by the principal or teacher, then returned directly to the state or local education agency. Follow-up telephone calls and written reminders encourage participation.

### Data Analysis

A weighting factor is applied to each record to reflect the likelihood of principals or teachers being selected, to adjust for differing patterns of nonresponse, and to improve precision by making sample distributions conform to known population distributions. Data from a state or city with an overall response rate of  $\geq 70\%$  and appropriate documentation were weighted, and data from surveys from a site not meeting these criteria were not weighted. Weighted data are representative of all public schools serving grades 6-12 in the jurisdiction; unweighted data are representative only of the participating schools. Because of a low response rate, data from principals' surveys conducted in one state and data from lead health education teachers' surveys conducted in two states are not included in this report. In addition, upon request of the

state education agency, data from three states are not included in this analysis. Thus, this report presents information on 34 states with data from both principals' and lead health education teachers' surveys, 1 state with data from only the principals' survey, and 13 cities with data from both principals' and lead health education teachers' surveys (Table 1).

Across states, the sample size of the principals' surveys ranged from 49 to 852, and the response rates ranged from 51% to 96%; across cities, the sample size ranged from 24 to 232, and the response rates ranged from 74% to 100% (Table 1). Across states, the sample size of the lead health education teachers' surveys ranged from 47 to 709, and the response rates ranged from 52% to 95%; across cities, the sample size ranged from 24 to 224, and the response rates ranged from 72% to 100%.

SUDAAN\* was used to compute point estimates (4). Medians are presented for all states (those with weighted data and those with unweighted data) and for all cities.

## RESULTS

### Health Education Courses

#### *Required Health Education*

Across states, 77.5%–100% (median: 95.4%) of schools required health education at least once for students in grades 6–12 (Table 2). Across cities, 86.0%–100% (median: 97.1%) of schools required health education at least once for students in grades 6–12. Among those schools that required health education, the percentage of schools that provided required health education in a separate health education course varied nearly twofold across states (range: 58.4%–100%; median: 87.6%) and fivefold across cities (range: 19.5%–100%; median: 75.8%).

#### *Curricula, Guidelines, and Frameworks for Required Health Education Courses*

The median percentage of schools with a required health education course that required teachers to use:

- A *state* health education curriculum, guidelines, or framework was 71.8% (range: 36.1%–97.5%) across states and 87.8% (range: 71.0%–96.9%) across cities (Table 3).
- A *school district* health education curriculum, guidelines, or framework was 80.5% (range: 42.4%–97.6%) across states and 97.7% (range: 75.1%–100%) across cities.
- A *school* health education curriculum, guidelines, or framework was 73.7% (range: 47.2%–87.2%) across states and 66.1% (range: 21.4%–90.9%) across cities.
- A *commercially developed* health education curriculum was 31.2% (range: 17.6%–42.9%) across states and 36.3% (range: 14.9%–76.2%) across cities.

\*Survey Data Analysis, a computer software for the statistical analysis of correlated data; for additional information, contact Research Triangle Institute, 3040 Cornwell Road, Research Triangle Park, NC 27709 (Telephone: 919-541-6000).



Schools could report use of more than one required curriculum for school health education courses.

### **Content of Required Health Education Courses**

In a required health education course, the median percentage of schools across states that tried to increase student knowledge of tobacco-use prevention was 97.3% (range: 92.5%–100%); AOD-use prevention, 99.2% (range: 96.3%–100%); dietary behaviors and nutrition, 94.3% (range: 89.3%–98.5%); physical activity and fitness, 94.5% (range: 87.5%–98.3%); pregnancy prevention, 84.9% (range: 47.4%–94.8%); HIV prevention, 97.2% (range: 75.8%–100%); other STD prevention, 93.8% (range: 65.2%–100%); violence prevention, 85.9% (range: 76.8%–95.5%); and suicide prevention, 72.5% (range: 54.6%–85.3%) (Table 4). The median percentage of schools across cities that tried to increase student knowledge of tobacco-use prevention was 95.3% (range: 89.3%–100%); AOD-use prevention, 100% (range: 96.6%–100%); dietary behaviors and nutrition, 97.4% (range: 86.0%–100%); physical activity and fitness, 96.4% (range: 86.0%–100%); pregnancy prevention, 92.5% (range: 74.4%–97.6%); HIV prevention, 100% (range: 89.8%–100%); other STD prevention, 98.9% (range: 85.2%–100%); violence prevention, 93.3% (range: 87.0%–100%); and suicide prevention, 75.6% (range: 39.7%–89.1%).

In a required health education course, the median percentage of schools across states that tried to improve students' communication skills was 90.2% (range: 84.2%–97.3%); decision-making skills, 96.5% (range: 91.1%–99.7%); goal-setting skills, 89.8% (range: 81.1%–97.3%); skills in resisting social pressures, 96.4% (range: 91.0%–100%); skills in nonviolent conflict resolution, 81.5% (range: 72.0%–92.5%); stress-management skills, 85.7% (range: 67.8%–94.9%); and skills in analysis of media messages, 74.9% (range: 57.9%–89.4%) (Table 5). The median percentage of schools across cities that tried to improve students' communication skills was 93.8% (range: 88.4%–100%); decision-making skills, 97.4% (range: 93.0%–100%); goal-setting skills, 94.4% (range: 79.1%–100%); skills in resisting social pressures, 96.4% (range: 90.8%–100%); skills in nonviolent conflict resolution, 90.0% (range: 83.4%–100%); stress-management skills, 80.1% (range: 53.5%–96.4%); and skills in analysis of media messages, 69.8% (range: 52.7%–87.6%).

### **Coordination of Health Education**

Across states and cities, the school district administrator (state median: 20.3%; local median: 17.1%), the school administrator (state median: 30.3%; local median: 45.2%), or a health education teacher (state median: 33.0%; local median: 26.8%) was identified most often as being responsible for coordinating health education (Table 6). Across the states and cities, school nurses (state median: 1.3%; local median: 0.0%) and outside consultants (state median: 0.0%; local median: 0.0%) rarely coordinated health education. The median percentage of schools having no coordinator of health education was 10.4% across states and 6.4% across cities.

### **Professional Preparation of Lead Health Education Teachers**

Across states, the median percentage of schools whose lead health education teacher had professional preparation in health and physical education was 41.0%;

health education only, 4.5%; physical education only, 18.3%; science, home economics, family and consumer education, or elementary education, 19.6%; nursing or counseling, 4.1%; and another discipline, 4.6% (Table 7). Across cities, the median percentage of schools whose lead health education teacher had professional preparation in health and physical education was 25.8%; health education only, 5.6%; physical education only, 5.2%; science, home economics, family and consumer education, or elementary education, 36.4%; nursing or counseling, 3.5%; and another discipline, 3.5%.

### **In-Service Training on Health Education Topics**

Across states, the median percentage of schools whose lead health education teacher had received  $\geq 4$  hours of in-service training in the previous 2 years on tobacco-use prevention was 21.3% (range: 11.7%–57.6%); AOD-use prevention, 40.3% (range: 29.0%–64.3%); dietary behaviors and nutrition, 26.9% (range: 16.3%–50.1%); physical activity and fitness, 31.9% (range: 19.7%–46.6%); pregnancy prevention, 21.0% (range: 9.3%–36.9%); HIV prevention, 51.4% (range: 29.2%–76.1%); other STD prevention, 33.8% (range: 23.5%–56.4%); violence prevention, 41.8% (range: 29.2%–75.1%); and suicide prevention, 15.6% (range: 9.2%–29.9%) (Table 8). Across cities, the median percentage of schools whose lead health education teacher had received  $\geq 4$  hours of in-service training in the previous 2 years on tobacco-use prevention was 40.8% (range: 3.3%–100%); AOD-use prevention was 58.5% (range: 29.7%–100%); dietary behaviors and nutrition, 33.6% (range: 11.6%–48.0%); physical activity and fitness, 35.8% (range: 11.6%–83.9%); pregnancy prevention, 43.3% (range: 21.3%–69.8%); HIV prevention, 76.1% (range: 48.4%–97.7%); other STD prevention, 60.6% (range: 38.8%–91.7%); violence prevention, 66.8% (range: 32.9%–93.0%); and suicide prevention, 26.2% (range: 10.5%–50.0%).

Across states, the median percentage of schools whose lead health education teacher wanted in-service training on tobacco-use prevention was 46.0% (range: 35.8%–59.6%); AOD-use prevention, 53.5% (range: 43.4%–68.7%); dietary behaviors and nutrition, 47.4% (range: 36.2%–58.3%); physical activity and fitness, 38.6% (range: 30.6%–54.7%); pregnancy prevention, 47.4% (range: 36.0%–62.8%); HIV prevention, 53.8% (range: 41.4%–74.6%); other STD prevention, 55.0% (range: 41.2%–67.5%); violence prevention, 62.4% (range: 51.4%–73.3%); and suicide prevention, 68.3% (range: 55.8%–78.5%) (Table 9). Across cities, the median percentage of schools whose lead health education teachers wanted in-service training on tobacco-use prevention was 47.1% (range: 36.3%–63.4%); AOD-use prevention, 62.1% (range: 48.9%–72.6%); dietary behaviors and nutrition, 54.9% (range: 23.3%–73.7%); physical activity and fitness, 45.8% (range: 26.6%–63.3%); pregnancy prevention, 46.8% (range: 30.4%–81.8%); HIV prevention, 56.1% (range: 28.0%–83.3%); other STD prevention, 52.7% (range: 39.8%–73.7%); violence prevention, 67.9% (range: 58.7%–81.9%); and suicide prevention, 70.9% (range: 53.5%–85.7%).

### **Parental and Community Involvement in School Health Education**

School health advisory councils involve the community and parents in conducting needs assessment, developing plans and policies, and coordinating programs and



resources. The median percentage of schools in states or cities with an advisory council to address school health policies and programs was <20% (data not shown). The percentage of schools ranged from 7.6% to 57.6% (median: 19.7%) across states and from 3.8% to 54.2% (median: 18.1%) across cities.

The median percentage of schools that reported parental feedback on health education was 59.1% across states and 54.2% across cities (Table 10). Among the schools that received feedback, the median percentage that received mainly positive feedback was 86.1% across states and 92.3% across cities. The median percentage of schools that received mainly negative feedback was 1.7% across states and 0.0% across cities, and the median percentage of schools that received equally positive and negative parental feedback was 12.2% across states and 7.5% across cities.

Parents were involved in required health education courses in several ways. A median of 50.4% of schools across states and 68.4% of schools across cities sent parents health-related educational materials; 43.8% of schools across states and 61.9% of schools across cities sent parents newsletters on health-related topics; 43.9% of schools across states and 65.5% of schools across cities invited parents to attend health education classes or health fairs; and 25.6% of schools across states and 39.1% of schools across cities offered health programs for parents (Table 11).

## HIV Education

The median percentage of schools that required HIV education be taught as part of a mandatory health education course was 94.3% (range: 65.3%–100%) across states and 98.1% (range: 84.4%–100%) across cities (Table 12). Among those schools across states that required HIV education, the median percentage that taught how HIV infection is and is not transmitted was 99.4% (range: 96.4%–100%); reasons for choosing sexual abstinence, 97.0% (range: 90.9%–100%); condom efficiency, 75.5% (range: 43.8%–92.7%); and how to use condoms correctly, 48.3% (range: 7.9%–65.4%). Among those schools across cities that required HIV education, the median percentage that taught how HIV infection is and is not transmitted was 100% (range: 97.3%–100%); reasons for choosing sexual abstinence, 98.3% (range: 92.7%–100%); condom efficiency, 84.1% (range: 64.9%–100%); and how to use condoms correctly was 69.0% (range: 42.3%–100%).

## Policies on HIV-Infected Students or School Staff

The median percentage of schools with a written policy from their school or school district regarding HIV-infected students or school staff was 69.5% (range: 45.7%–89.4%) across states and 82.5% (range: 67.6%–100%) across cities (Table 13). Across states, the median percentage of schools with a written policy that addressed maintenance of confidentiality was 94.9% (range: 84.8%–100%); protection of HIV-infected persons from discrimination, 90.4% (range: 83.5%–97.9%); worksite safety (e.g., use of universal precautions), 92.7% (range: 83.4%–98.6%); evaluation of the health status of HIV-infected students and school staff, 68.4% (range: 50.0%–79.3%); communication of the policy to students and parents, 75.7% (range: 56.3%–88.4%); and inappropriateness of routine testing for HIV infection, 36.4% (range: 22.8%–58.1%). Across cities, the median percentage of schools with a written policy that addressed maintenance of confidentiality was 100% (range: 93.0%–100%); protection of HIV-infected persons

from discrimination, 97.6% (range: 88.7%–100%); worksite safety, 95.9% (range: 77.2%–100%); evaluation of the health status of HIV-infected students and school staff, 65.5% (range: 41.9%–97.6%); communication of the policy to students, school staff, and parents, 84.4% (range: 69.0%–100%); and inappropriateness of routine testing for HIV infection, 47.8% (range: 4.8%–73.3%).

## DISCUSSION

School health education could be one of the most effective means to reduce and prevent some of the most serious health problems in the United States, including cardiovascular disease, cancer, motor-vehicle crashes, homicide, and suicide (3). The 1996 School Health Education Profiles data are generally similar to those from the 1994 School Health Policies and Programs Study (SHPPS) (5). For example, the Profiles data corroborate the SHPPS finding that many schools required health education (SHPPS: 97.2%; Profiles: >77%). However, the median percentage of schools across states and cities that taught pregnancy prevention, violence prevention, or suicide prevention was higher in the Profiles than SHPPS. This difference could be a result of increases in the percentage of schools teaching these topics from 1994 to 1996 or a result of different survey methodologies (e.g., questionnaire wording, mode of data collection, or sample design). Limitations of the 1996 School Health Education Profiles are the exclusion of private and alternative schools and the self-reporting of data by principals and lead health education teachers.

The IOM recommends that U.S. schools require a one-semester health education course at the secondary school level taught by a qualified health education teacher (3). The Profiles data demonstrated that among schools that required health education, the median percentage that taught it as a separate course was high (state: 87.6%; local: 75.8%), but the variation was nearly twofold at the state level and fivefold at the local level. Some education agencies will need assistance in creating a separate health education course. Lead health education teachers were more likely to have had professional preparation in health and physical education (state median: 41.0%; local median: 25.8%) than in any other major. Many other lead health education teachers reported a nonhealth education major (state median: 4.1%–19.6%; local median: 3.5%–36.4%). The number of health education teachers who major in health education needs to be increased.

The elements of school health education identified by CDC and assessed by the Profiles include a) helping students develop skills to avoid risk behaviors; b) managing and coordinating the health education program by a trained professional; c) and involving parents, health professionals, and other community members (1). The median percentage of schools across states and cities that taught skills in communication, decision making, goal setting, resisting social pressures, nonviolent conflict resolution, stress management, or analysis of media messages was >69%. The median percentage of schools that had a health education teacher coordinate the health education program was only 33% across states and 27% across cities. Parental and community involvement in school health education was low or moderate: the percentage of schools with a health advisory council ranged from 7.6% to 57.6% across states and from 3.8% to 54.2% across cities.

CDC has issued guidelines for school health programs to prevent tobacco use and addiction (6), promote lifelong healthy eating (7), promote lifelong physical activity (8), and prevent the spread of the acquired immunodeficiency syndrome (9). Each set of guidelines addresses the need for health education instruction for students and training for teachers. The School Health Education Profiles data demonstrated that >86% of schools across participating states and cities provided health education to students on reducing tobacco use and improving dietary behaviors and physical activity and that >76% provided health education to students on preventing HIV infection. The median percentage of teachers who received in-service training during the previous 2 years on tobacco-use prevention, dietary behaviors, and physical activity was only 21%–41% across states and cities; the median percentage of teachers who received in-service training on HIV prevention was 51% across states and 76% across cities. In addition, the median percentage of lead health education teachers who wanted in-service training on these topics was approximately 50%. More frequent in-service training with the most up-to-date information is needed to enable teachers to confidently and effectively present these topics to their students.

Many adolescents in the United States engage in behaviors that increase their risk for HIV infection (10). The School Health Education Profiles indicated that most schools in participating states and cities taught skills to reduce such risk behaviors, and the median percentage of schools across states and cities that required HIV education be taught as part of a mandatory health education course was >94%. The National Association of State Boards of Education (NASBE) encourages every state and school district to develop policies concerning HIV-infected students and school staff (11). The Profiles indicated that the median percentage of schools that had such a school or school district written policy was 70% across states and 83% across cities. Among those schools with a written policy, the median percentage that included topics recommended by NASBE (i.e., confidentiality; protecting HIV-infected persons from discrimination; worksite safety; and communicating the policy to students, school staff, and parents) was >75%.

As the School Health Education Profiles data demonstrated, a large percentage of schools provide a required course in health education to help students develop the knowledge and skills they need to adopt healthy lifestyles. Although these Profiles do not provide an in-depth assessment of all elements of school health education, they enable states and cities to monitor essential aspects of health education and to determine areas needing greater emphasis. For example, in Delaware, Profiles data are being used for program planning and development and to encourage universities to provide appropriate preservice education. In Minnesota and West Virginia, Profiles data are being used to determine what topics are being taught in the classroom and to determine what topics to offer for staff development. In South Carolina, Profiles data are being used to help advocate for requiring a health education course in high schools. In Dallas, Profiles data are being used to determine how schools are coordinating components of the school health program and to ensure that knowledge and skills are being taught in health education.

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**TABLE 1. Sample size and response rates, selected U.S. sites — School Health Education Profiles, principals' and teachers' surveys, 1996**

Site	Principals' surveys		Teachers' surveys	
	Sample size	Response rate (%)	Sample size	Response rate (%)
<b>STATE SURVEYS</b>				
<b>Weighted data</b>				
Alabama	371	85	367	84
Arkansas	227	74	215	70
California	852	77	NA*	NA
Connecticut	242	89	232	86
Delaware	49	86	47	82
Idaho	147	79	133	71
Iowa	280	81	262	76
Kentucky	224	72	222	71
Louisiana†	255	71	NA	NA
Maine	206	96	204	95
Massachusetts	393	90	383	87
Michigan	322	86	307	82
Minnesota	213	79	228	84
Missouri	249	73	250	74
Montana	289	85	286	84
Nebraska	423	83	388	76
New Hampshire	167	85	151	77
New Mexico	191	77	177	71
North Dakota	173	85	169	83
Ohio	400	87	371	80
Rhode Island	69	75	66	72
South Carolina	285	72	NA	NA
South Dakota	214	74	NA	NA
Tennessee	312	83	310	83
Utah	232	88	215	82
Washington	274	80	256	75
West Virginia	197	93	196	92
Wyoming	138	85	122	75
<b>Unweighted data</b>				
Alaska	174	66	154	59
California	NA	NA	709	64
Colorado	178	60	153	52
Georgia	238	60	238	60
Indiana	358	51	NA	NA
Kansas	333	67	270	54
Louisiana†	NA	NA	230	64
New Jersey	314	68	304	66
Oregon	291	60	254	53
South Carolina	NA	NA	258	65
South Dakota	NA	NA	200	69
<b>LOCAL SURVEYS</b>				
<b>Weighted data</b>				
Chicago, IL	232	75	224	72
Dallas, TX	46	87	48	91
Ft. Lauderdale, FL	55	100	55	100
Houston, TX	53	74	59	82
Jersey City, NJ	28	93	28	93
Los Angeles, CA	90	75	90	75
Miami, FL	88	96	81	88
Newark, NJ	47	96	46	94
New Orleans, LA	24	100	24	100
Philadelphia, PA	33	79	31	74
San Diego, CA	43	100	43	100
San Francisco, CA	35	88	35	88
Washington, DC	43	88	46	94

\*Not applicable.

†Survey did not include schools from the Orleans Parish School Board.

**TABLE 2. Percentage of schools that required health education in grades 6-12 and among those schools, the percentage that taught a separate health education course, selected U.S. sites — School Health Education Profiles, principals' surveys, 1996**

Site	Required health education	Taught a separate health education course*
<b>STATE SURVEYS</b>		
<b>Weighted data</b>		
Alabama	94.8	78.1
Arkansas	98.8	95.2
California	89.8	71.0
Connecticut	98.2	85.7
Delaware	100.0	100.0
Idaho	97.7	98.5
Iowa	83.7	88.6
Kentucky	87.0	79.4
Louisiana†	94.0	76.4
Maine	97.5	87.6
Massachusetts	96.6	93.8
Michigan	86.8	82.9
Minnesota	98.9	95.5
Missouri	84.0	88.6
Montana	97.0	58.4
Nebraska	93.9	75.0
New Hampshire	93.8	95.2
New Mexico	82.9	68.2
North Dakota	95.4	91.8
Ohio	99.5	98.1
Rhode Island	100.0	87.6
South Carolina	93.0	71.4
South Dakota	77.5	66.6
Tennessee	92.3	72.9
Utah	97.7	97.1
Washington	95.3	84.6
West Virginia	98.9	94.8
Wyoming	90.6	65.6
<b>Unweighted data</b>		
Alaska	93.6	96.1
Colorado	84.7	86.9
Georgia	99.2	86.8
Indiana	99.4	96.3
Kansas	95.8	67.8
New Jersey	100.0	90.9
Oregon	100.0	88.4
<b>State median</b>	<b>95.4</b>	<b>87.6</b>
<b>LOCAL SURVEYS</b>		
<b>Weighted data</b>		
Chicago, IL	93.4	58.9
Dallas, TX	86.0	70.2
Ft. Lauderdale, FL	100.0	83.0
Houston, TX	100.0	79.0
Jersey City, NJ	100.0	75.8
Los Angeles, CA	100.0	100.0
Miami, FL	91.9	63.6
Newark, NJ	95.8	84.8
New Orleans, LA	100.0	85.7
Philadelphia, PA	97.0	100.0
San Diego, CA	100.0	19.5
San Francisco, CA	97.1	60.4
Washington, DC	94.8	66.7
<b>Local median</b>	<b>97.1</b>	<b>75.8</b>

\*Among those schools that required health education.

†Survey did not include schools from the Orleans Parish School Board.

**TABLE 3. Percentage of schools that required teachers to use a specific curriculum, guidelines, or framework in a required health education course, selected U.S. sites — School Health Education Profiles, teachers' surveys, 1996**

Site	State curriculum, guidelines, or framework	School district curriculum, guidelines, or framework	School curriculum, guidelines, or framework	Commercial curriculum
<b>STATE SURVEYS</b>				
<b>Weighted data</b>				
Alabama	95.8	50.6	57.0	25.0
Arkansas	84.2	57.6	60.0	25.5
Connecticut	76.6	82.2	80.0	37.8
Delaware	85.4	80.6	62.8	32.7
Idaho	68.4	78.8	61.3	30.5
Iowa	71.5	80.3	85.4	26.2
Kentucky	69.1	63.8	72.7	24.7
Maine	58.6	62.4	62.9	17.6
Massachusetts	60.9	69.2	77.5	32.3
Michigan	72.0	79.5	69.4	29.6
Minnesota	61.7	82.6	73.2	22.4
Missouri	68.1	85.8	84.9	26.2
Montana	54.5	68.6	78.4	30.5
Nebraska	36.1	56.3	76.9	22.9
New Hampshire	54.7	66.2	75.9	27.7
New Mexico	84.9	87.5	73.3	35.8
North Dakota	41.7	42.4	60.9	28.8
Ohio	76.0	95.7	81.9	25.1
Rhode Island	91.3	83.7	80.5	31.8
Tennessee	93.9	58.2	53.8	32.6
Utah	95.6	78.5	50.5	33.2
Washington	67.6	80.2	61.5	31.9
West Virginia	97.0	81.5	75.4	42.9
Wyoming	43.3	90.8	74.8	31.2
<b>Unweighted data</b>				
Alaska	41.1	89.6	47.6	28.1
California	84.0	86.1	64.2	37.1
Colorado	41.0	86.1	75.2	35.8
Georgia	97.5	86.0	78.3	38.5
Kansas	61.3	86.2	76.6	31.1
Louisiana*	91.1	68.1	47.2	27.5
New Jersey	89.0	97.6	87.2	36.3
Oregon	90.8	92.0	74.0	35.4
South Carolina	80.3	87.9	62.4	34.0
South Dakota	49.3	68.1	75.2	42.8
<b>State median</b>	<b>71.8</b>	<b>80.5</b>	<b>73.7</b>	<b>31.2</b>
<b>LOCAL SURVEYS</b>				
<b>Weighted data</b>				
Chicago, IL	87.8	75.1	77.6	43.1
Dallas, TX	84.6	92.6	66.1	36.3
Ft. Lauderdale, FL	85.5	98.1	66.0	28.3
Houston, TX	90.9	100.0	62.8	37.7
Jersey City, NJ	89.0	100.0	73.0	28.4
Los Angeles, CA	96.9	95.5	75.0	25.6
Miami, FL	95.0	98.4	62.7	33.2
Newark, NJ	89.1	100.0	76.0	40.0
New Orleans, LA	95.7	86.4	90.9	55.0
Philadelphia, PA	75.0	100.0	62.1	25.9
San Diego, CA	72.1	97.7	21.4	76.2
San Francisco, CA	78.1	86.7	42.3	14.9
Washington, DC	71.0	82.9	76.1	46.9
<b>Local median</b>	<b>87.8</b>	<b>97.7</b>	<b>66.1</b>	<b>36.3</b>

\*Survey did not include schools from the Orleans Parish School Board.

TABLE 4. Percentage of schools that tried to increase student knowledge on specific topics in a required health education course in any of grades 6-12, selected U.S. sites — School Health Education Profiles, teachers' surveys, 1996

Site	Tobacco-use prevention	Alcohol and other drug-use prevention	Dietary behaviors and nutrition	Physical activity and fitness	Pregnancy prevention	HIV* prevention	Other STD† prevention	Violence prevention	Suicide prevention
<b>STATE SURVEYS</b>									
<b>Weighted data</b>									
Alabama	97.8	99.7	96.9	98.0	74.3	94.0	92.3	83.4	71.2
Arkansas	96.1	99.6	95.7	96.9	78.4	94.0	92.3	79.1	81.7
California	98.5	98.5	93.8	87.5	85.3	97.0	93.8	88.5	82.9
Connecticut	100.0	100.0	93.8	96.4	93.0	100.0	100.0	95.5	84.6
Delaware	99.2	99.2	95.9	96.9	65.3	92.1	86.8	90.9	79.1
Iowa	97.3	99.5	96.6	94.0	85.6	88.1	94.5	84.2	73.8
Kentucky	93.5	98.0	90.4	94.1	78.5	89.1	83.8	83.6	64.0
Maine	97.9	100.0	95.9	94.4	87.1	97.8	94.2	81.3	65.4
Massachusetts	98.4	99.1	95.8	90.1	83.4	98.6	93.2	94.3	69.3
Michigan	95.9	99.3	93.9	92.6	76.3	96.2	91.7	81.5	57.4
Minnesota	99.6	99.4	98.5	95.9	94.8	99.0	97.7	90.1	83.8
Missouri	96.6	99.5	98.1	97.8	84.5	93.8	93.9	84.7	75.0
Montana	95.4	98.2	92.8	96.8	70.9	94.8	87.1	77.1	58.8
Nebraska	97.0	98.7	92.9	94.6	73.6	92.5	87.3	76.8	67.4
New Hampshire	92.5	97.6	91.9	91.6	88.9	98.4	95.7	89.9	74.2
New Mexico	98.8	100.0	93.9	93.5	84.1	99.0	96.3	93.4	66.7
North Dakota	98.0	99.1	93.0	92.6	71.2	93.4	90.4	79.6	79.7
Ohio	95.2	100.0	95.7	92.6	90.7	98.4	95.8	85.2	81.0
Rhode Island	97.9	98.9	97.7	98.3	89.8	100.0	93.0	95.0	81.3
Tennessee	97.1	98.5	97.5	95.1	85.1	98.4	94.0	80.1	64.0
Utah	92.6	98.8	92.2	92.5	75.2	95.1	92.7	87.2	85.3
Washington	98.4	99.5	93.8	97.5	88.4	98.0	95.1	84.6	68.9
West Virginia	98.4	99.5	93.8	97.5	88.2	98.6	96.7	86.1	82.0
Wyoming	93.7	99.2	98.3	97.5	74.9	94.8	91.6	86.4	54.6
<b>Unweighted data</b>									
Alaska	94.1	96.3	90.2	89.6	79.1	90.4	85.9	85.9	69.4
California	98.1	98.4	92.5	90.2	86.9	97.2	93.7	86.5	63.4
Colorado	94.4	99.2	91.9	92.7	84.6	94.4	92.7	89.5	61.0
Georgia	97.5	98.7	93.7	93.7	88.1	96.6	95.3	89.5	82.2
Kansas	97.2	99.2	93.7	97.6	89.3	99.6	96.4	80.0	60.4
Louisiana†	95.8	97.7	89.3	96.3	47.4	75.8	65.2	85.8	66.2
New Jersey	99.3	100.0	94.5	96.9	90.5	99.7	98.0	94.2	80.8
Oregon	98.4	99.6	96.4	96.4	87.1	99.6	95.2	90.0	73.7
South Carolina	93.6	96.8	94.0	94.0	89.8	97.2	96.3	82.7	57.8
South Dakota	95.7	96.6	97.1	97.1	82.6	99.3	93.5	90.6	76.1
State median	97.3	99.2	94.3	94.5	84.9	97.2	93.8	85.9	72.5



TABLE 4. Percentage of schools that tried to increase student knowledge on specific topics in a required health education course in any of grades 6-12, selected U.S. sites — School Health Education Profiles, teachers' surveys, 1996 — Continued

Site	Tobacco-use prevention	Alcohol and other drug-use prevention	Dietary behaviors and nutrition	Physical activity and fitness	Pregnancy prevention	HIV* prevention	Other STD† prevention	Violence prevention	Suicide prevention
<b>LOCAL SURVEYS</b>									
<b>Weighted data</b>									
Chicago, IL	89.3	97.7	93.9	98.4	74.4	89.8	85.2	92.0	39.7
Dallas, TX	95.2	97.4	92.6	95.2	76.7	89.9	89.4	92.6	61.3
Ft. Lauderdale, FL	96.4	100.0	98.2	96.4	85.5	96.4	94.5	90.9	74.5
Houston, TX	93.1	96.6	94.9	94.7	86.6	96.6	96.4	98.3	75.6
Jersey City, NJ	96.4	100.0	92.8	96.4	92.5	100.0	100.0	100.0	89.1
Los Angeles, CA	95.3	100.0	99.0	91.5	96.1	100.0	98.9	87.0	75.6
Miami, FL	96.6	98.4	98.4	90.3	91.7	98.4	96.6	94.8	81.4
Newark, NJ	97.4	100.0	97.4	97.1	97.3	100.0	100.0	100.0	84.2
New Orleans, LA	95.7	100.0	95.5	100.0	95.7	100.0	100.0	100.0	77.3
Philadelphia, PA	93.3	100.0	100.0	100.0	96.7	100.0	100.0	93.3	60.7
San Diego, CA	95.2	100.0	86.0	86.0	95.3	100.0	100.0	93.0	61.9
San Francisco, CA	100.0	100.0	100.0	96.9	89.9	100.0	96.8	93.3	83.1
Washington, DC	92.7	100.0	100.0	100.0	97.6	100.0	100.0	100.0	69.8
<b>Local median</b>	<b>95.3</b>	<b>100.0</b>	<b>97.4</b>	<b>96.4</b>	<b>92.5</b>	<b>100.0</b>	<b>98.9</b>	<b>93.3</b>	<b>75.6</b>

\* Human immunodeficiency virus.

† Sexually transmitted disease.

‡ Survey did not include schools from the Orleans Parish School Board.

TABLE 5. Percentage of schools that tried to improve specific student skills in a required health education course in any of grades 6-12, selected U.S. sites — School Health Education Profiles, teachers' surveys, 1996

Site	Communication	Decision making	Goal setting	Resisting social pressures	Nonviolent conflict resolution	Stress management	Analysis of media messages
<b>STATE SURVEYS</b>							
<b>Weighted data</b>							
Alabama	84.2	93.3	89.1	91.0	80.9	79.5	58.4
Arkansas	86.8	95.3	90.3	96.7	76.9	91.5	57.9
Connecticut	91.9	97.2	89.2	96.6	83.5	87.4	89.4
Delaware	97.3	98.2	93.0	100.0	83.4	89.4	78.2
Idaho	90.8	96.8	89.7	97.8	81.1	89.8	77.9
Iowa	86.4	97.2	89.7	96.5	78.1	89.7	74.5
Kentucky	86.3	92.2	88.8	91.7	78.7	81.8	71.0
Maine	91.3	94.8	88.6	92.3	72.0	85.5	83.3
Massachusetts	91.8	98.6	88.4	97.5	89.5	79.6	88.3
Michigan	90.5	94.3	90.3	97.1	86.3	86.3	90.3
Minnesota	90.8	98.8	90.4	97.7	82.6	88.5	74.7
Missouri	87.2	97.5	89.1	97.0	78.6	88.0	74.6
Montana	87.1	91.1	86.0	95.6	77.0	80.1	62.6
Nebraska	85.7	94.3	86.7	94.4	74.6	79.6	71.3
New Hampshire	91.8	97.0	86.9	94.3	82.8	82.9	83.7
New Mexico	87.6	93.4	89.9	95.7	77.7	78.0	70.6
North Dakota	90.2	98.8	92.1	94.4	77.4	89.2	67.8
Ohio	88.7	95.8	91.4	97.5	79.9	88.3	75.0
Rhode Island	93.3	96.7	88.7	96.7	90.2	82.5	80.1
Tennessee	91.3	96.6	81.1	94.9	81.9	94.7	62.6
Utah	92.7	95.6	94.2	96.6	82.6	83.5	76.6
Washington	90.6	93.0	85.4	94.6	80.0	83.6	79.4
West Virginia	94.9	97.3	97.3	95.8	88.0	91.6	77.5
Wyoming	85.1	95.2	90.1	93.6	80.6	78.1	75.5
<b>Unweighted data</b>							
Alaska	90.2	93.3	85.8	94.0	82.8	81.3	73.9
California	87.6	94.3	86.4	93.7	81.7	67.8	78.5
Colorado	89.2	95.8	92.5	99.2	81.7	86.0	73.3
Georgia	91.1	97.5	94.9	96.2	84.8	94.9	80.9
Kansas	87.3	97.2	90.5	97.2	77.7	85.8	65.7
Louisiana*	87.7	92.4	88.3	95.8	85.3	81.0	67.0
New Jersey	95.2	99.7	95.9	99.3	92.5	88.0	86.0
Oregon	94.0	98.0	92.9	98.8	83.4	89.2	80.9
South Carolina	90.2	96.3	94.0	98.2	78.5	79.3	70.8
South Dakota	88.5	97.1	90.6	95.7	83.5	82.0	69.8
State median	90.2	96.5	89.8	96.4	81.5	85.7	74.9

TABLE 5. Percentage of schools that tried to improve specific student skills in a required health education course in any of grades 6-12, selected U.S. sites — School Health Education Profiles, teachers' surveys, 1996 — Continued

Site	Communication	Decision making	Goal setting	Resisting social pressures	Nonviolent conflict resolution	Stress management	Analysis of media messages
<b>LOCAL SURVEYS</b>							
<b>Weighted data</b>							
Chicago, IL	90.4	95.7	94.4	94.4	89.8	74.5	63.7
Dallas, TX	92.1	97.4	83.0	94.7	85.7	82.5	52.7
Ft. Lauderdale, FL	94.5	98.2	98.2	96.4	92.7	96.4	83.6
Houston, TX	94.7	100.0	100.0	98.2	100.0	93.2	65.7
Jersey City, NJ	95.4	95.4	96.4	100.0	100.0	85.8	85.8
Los Angeles, CA	92.3	95.8	89.0	97.9	83.4	79.8	87.6
Miami, FL	95.2	96.7	91.7	95.2	88.3	80.1	83.0
Newark, NJ	95.2	100.0	97.4	100.0	100.0	78.3	64.0
New Orleans, LA	100.0	100.0	100.0	91.3	95.7	86.4	59.1
Philadelphia, PA	92.9	100.0	96.7	100.0	90.0	76.7	75.0
San Diego, CA	88.4	93.0	79.1	93.0	83.7	53.5	69.8
San Francisco, CA	93.8	96.9	90.7	100.0	83.5	78.9	74.3
Washington, DC	90.1	97.5	92.6	90.8	92.7	85.4	63.0
<b>Local median</b>	<b>93.8</b>	<b>97.4</b>	<b>94.4</b>	<b>96.4</b>	<b>90.0</b>	<b>80.1</b>	<b>69.8</b>

\*Survey did not include schools from the Orleans Parish School Board.

TABLE 6. Percentage of schools that had a specific person responsible for coordinating health education within the school, selected U.S. sites — School Health Education Profiles, principals' surveys, 1996

Site	School district administrator*	School administrator†	Health education teacher	School nurse	Outside consultant	No coordinator
<b>STATE SURVEYS</b>						
<b>Weighted data†</b>						
Alabama	16.9	34.6	34.5	0.5	0.3	13.2
Arkansas	15.4	39.2	32.3	3.0	0	10.2
California	22.2	36.4	22.0	4.1	0.7	12.5
Connecticut	38.6	29.4	26.0	0.4	0.9	4.7
Delaware	21.1	35.8	40.6	0	0	2.5
Idaho	21.5	19.6	51.4	0	0	7.4
Iowa	31.2	23.9	32.2	2.7	0.5	9.5
Kentucky	10.9	35.2	37.0	1.3	0	15.6
Louisiana†	20.3	34.1	37.4	0	0	8.2
Maine	11.9	19.5	52.6	2.5	0	13.5
Massachusetts	59.5	22.1	13.7	0.5	0.3	3.9
Michigan	29.3	28.5	29.0	1.9	0	11.3
Minnesota	17.3	27.5	47.8	0	0	7.5
Missouri	20.0	30.3	34.2	5.1	0	10.4
Montana	15.6	17.7	54.2	1.1	0	11.3
Nebraska	14.9	33.8	32.9	1.3	0	17.2
New Hampshire	7.6	30.7	35.8	10.6	0	15.3
New Mexico	15.6	29.5	29.2	11.2	0	14.7
North Dakota	14.2	28.1	50.5	0	0	7.2
Ohio	29.2	29.7	29.0	0.5	0.6	11.0
Rhode Island	29.4	44.8	19.1	3.6	0	3.1
South Carolina	24.6	36.4	29.2	1.3	0	8.6
South Dakota	18.2	25.2	37.3	1.5	0	17.8
Tennessee	20.5	36.6	27.9	1.1	0	13.8
Utah	17.3	33.0	45.4	0	0	4.2
Washington	18.1	25.0	36.2	4.9	0.6	15.1
West Virginia	16.0	30.6	44.1	0.5	0	8.8
Wyoming	26.4	21.8	30.5	5.3	0	16.0
<b>Unweighted data†</b>						
Alaska	27.3	33.1	23.4	1.9	0.6	13.6
Colorado	17.5	26.3	42.3	0.7	0	13.1
Georgia	26.2	44.6	22.7	0	0	6.4
Indiana	15.3	49.5	27.9	0	0	7.2
Kansas	24.3	23.7	33.0	4.0	0	15.0
New Jersey	32.0	41.8	13.7	6.2	0	6.2
Oregon	20.3	30.2	42.0	0	0	7.5
<b>State median</b>	<b>20.3</b>	<b>30.3</b>	<b>33.0</b>	<b>1.3</b>	<b>0</b>	<b>10.4</b>

TABLE 6. Percentage of schools that had a specific person responsible for coordinating health education within the school, selected U.S. sites — School Health Education Profiles, principals' surveys, 1996 — Continued

Site	School district administrator*	School administrator†	Health education teacher	School nurse	Outside consultant	No coordinator
<b>LOCAL SURVEYS</b>						
<b>Weighted data‡</b>						
Chicago, IL	2.0	45.2	26.4	1.0	1.0	24.4
Dallas, TX	29.8	35.6	26.8	0	0	7.8
Ft. Lauderdale, FL	20.0	49.1	27.3	0	0	3.6
Houston, TX	10.9	54.2	30.6	2.4	0	2.0
Jersey City, NJ	44.8	21.4	0	7.5	0	26.3
Los Angeles, CA	5.8	53.3	25.2	0	0	5.7
Miami, FL	17.1	56.6	22.4	0	0	3.9
Newark, NJ	12.6	52.6	2.6	2.5	0	29.7
New Orleans, LA	14.3	47.6	38.1	0	0	0
Philadelphia, PA	20.0	33.3	40.0	0	0	6.7
San Diego, CA	35.7	19.0	4.8	23.8	0	16.7
San Francisco, CA	22.8	19.4	51.4	0	0	6.4
Washington, DC	10.6	28.9	54.7	0	2.9	2.9
<b>Local median</b>	<b>17.1</b>	<b>45.2</b>	<b>26.8</b>	<b>0</b>	<b>0</b>	<b>6.4</b>

\*District health education coordinator, district general curriculum coordinator, superintendent, or other district administrator.

†Principal, department chair, or school curriculum coordinator.

‡Percentages for each row might not add up to 100.0 because of rounding.

§Survey did not include schools from the Orleans Parish School Board.

TABLE 7. Percentage of lead health education teachers who had a specific type of professional preparation, selected U.S. sites — School Health Education Profiles, teachers' surveys, 1996

Site	Health and physical education only	Health education only	Physical education only	Science, home economics, family and consumer education, or elementary education	Nursing or counseling	Other
<b>STATE SURVEYS</b>						
<b>Weighted data*</b>						
Alabama	51.7	1.1	25.0	15.7	0.6	5.8
Arkansas	59.4	2.3	30.7	4.7	1.5	1.4
Connecticut	37.8	18.2	17.2	19.4	6.5	1.0
Delaware	75.2	4.7	13.4	0	4.7	2.0
Idaho	41.2	2.1	31.8	16.2	1.8	6.9
Iowa	21.9	2.5	25.6	43.7	2.9	3.3
Kentucky	48.8	6.5	12.0	24.2	3.6	2.9
Maine	38.0	13.2	13.4	25.2	9.6	1.0
Massachusetts	40.7	24.2	11.4	1.5	4.3	4.8
Michigan	27.0	10.4	18.1	35.6	2.1	6.8
Minnesota	74.9	8.7	8.7	4.5	1.4	1.8
Missouri	39.7	1.9	31.1	21.5	2.4	3.3
Montana	48.8	0.8	21.8	13.2	5.7	9.7
Nebraska	27.7	1.7	25.1	36.7	3.0	5.9
New Hampshire	19.0	7.9	21.1	25.9	21.5	4.6
New Mexico	29.7	10.0	21.7	14.6	17.8	6.2
North Dakota	29.5	1.9	18.4	38.0	2.5	9.8
Ohio	64.8	7.3	10.7	14.2	1.3	1.7
Rhode Island	49.3	16.2	19.3	1.5	13.7	0
Tennessee	49.1	2.4	8.8	29.1	5.6	5.1
Utah	36.4	14.1	21.6	17.5	0.6	9.9
Washington	22.6	5.5	19.7	34.4	9.1	8.6
West Virginia	75.7	4.2	9.3	8.5	0	2.2
Wyoming	36.9	0	18.3	28.1	11.3	3.9
<b>Unweighted data*</b>						
Alaska	15.6	0	9.0	45.9	5.7	23.8
California	17.1	5.9	15.5	39.9	10.5	12.2
Colorado	26.1	3.5	27.0	29.0	3.5	13.0
Georgia	59.9	4.3	12.1	10.3	29.9	19.5
Kansas	42.7	0.4	29.5	14.5	8.7	4.1
Louisiana†	77.5	1.0	13.4	4.8	0.5	2.9
New Jersey	61.2	9.1	6.2	8.3	13.0	2.2
Oregon	47.3	15.1	12.1	19.7	1.3	4.6
South Carolina	40.7	4.7	22.9	24.8	5.1	1.9
South Dakota	49.6	1.6	7.2	24.8	5.6	11.2
State median	41.0	4.5	18.3	19.6	4.1	4.6

TABLE 7. Percentage of lead health education teachers who had a specific type of professional preparation, selected U.S. sites — School Health Education Profiles, teachers' surveys, 1996 — Continued

Site	Health and physical education		Physical education only	Science, home economics, family and consumer education, or elementary education	Nursing or counseling	Other
	Health education only	Physical education only				
LOCAL SURVEYS						
Weighted data*						
Chicago, IL	23.9	0	19.2	38.2	14.2	4.4
Dallas, TX	21.9	19.7	12.2	41.4	2.6	2.1
Ft. Lauderdale, FL	44.0	6.0	10.0	32.0	6.0	2.0
Houston, TX	64.6	5.6	26.0	1.9	1.9	0
Jersey City, NJ	25.8	0	3.9	43.0	19.5	7.8
Los Angeles, CA	16.2	24.2	13.2	39.4	3.5	3.5
Miami, FL	22.4	17.0	5.1	36.4	10.4	8.6
Newark, NJ	43.2	2.9	2.9	21.9	12.9	16.2
New Orleans, LA	100.0	0	0	0	0	0
Philadelphia, PA	96.7	0	3.3	0	0	0
San Diego, CA	0	13.3	3.3	53.3	23.3	6.7
San Francisco, CA	20.9	9.9	11.0	36.7	0	21.4
Washington, DC	87.0	0	5.2	5.2	0	2.6
Local median	25.8	5.6	5.2	36.4	3.5	3.5

\* Percentages for each row might not add up to 100.0 because of rounding.

† Survey did not include schools from the Orleans Parish School Board.

TABLE 8. Percentage of lead health education teachers who had attended  $\geq 4$  hours of in-service training in the previous 2 years on specific health education topics, selected U.S. sites — School Health Education Profiles, teachers' surveys, 1996

Site	Tobacco-use prevention	Alcohol and other drug-use prevention	Dietary behaviors and nutrition	Physical activity and fitness	Pregnancy prevention	HIV* prevention	Other STD† prevention	Violence prevention	Suicide prevention
<b>STATE SURVEYS</b>									
<b>Weighted data</b>									
Alabama	21.3	34.3	22.1	35.1	14.0	36.4	26.6	31.7	15.2
Arkansas	16.9	37.8	22.3	37.7	14.9	51.0	34.0	32.6	22.8
California	20.2	48.2	29.2	31.8	29.1	57.5	38.4	60.3	22.6
Connecticut	23.5	63.7	36.5	33.4	36.9	58.6	36.9	66.5	19.0
Delaware	41.0	64.3	39.3	46.6	18.1	51.5	37.9	52.3	28.8
Idaho	17.0	36.1	26.5	30.1	20.7	49.3	35.9	35.6	12.0
Iowa	21.2	36.9	21.3	29.6	21.9	45.6	30.7	39.0	13.4
Kentucky	18.2	42.0	27.4	27.6	21.2	58.5	36.5	39.1	10.9
Maine	57.6	56.2	45.9	37.9	35.7	60.6	43.5	75.1	23.5
Massachusetts	22.9	41.5	28.5	27.4	32.3	62.5	48.9	75.1	9.2
Michigan	19.8	38.0	27.1	34.7	20.6	53.9	29.3	53.9	14.7
Minnesota	22.3	41.4	22.1	29.2	10.0	33.7	24.1	55.7	17.3
Missouri	23.6	37.0	27.3	44.7	11.1	52.2	30.3	31.6	17.3
Montana	20.8	36.8	28.6	30.1	12.2	35.0	27.6	29.2	13.0
Nebraska	39.8	55.5	50.1	45.5	25.1	61.5	39.6	61.0	29.9
New Hampshire	28.3	44.5	16.3	28.4	30.1	61.1	38.0	42.2	18.8
New Mexico	29.0	45.3	39.3	32.8	14.4	50.9	37.0	40.0	20.5
North Dakota	17.0	37.6	20.3	27.9	17.5	41.7	26.4	36.2	9.9
Ohio	19.6	35.6	24.2	19.7	19.4	29.2	26.2	59.8	27.8
Rhode Island	24.6	41.0	34.4	38.3	21.7	53.7	34.4	41.4	16.0
Tennessee	39.4	55.1	35.3	31.6	35.4	76.1	56.4	46.5	25.1
Utah	16.4	38.8	27.3	32.0	19.9	54.8	32.9	39.3	10.2
Washington	36.4	48.3	34.3	46.2	20.4	56.2	40.6	50.7	10.2
West Virginia	11.7	33.8	33.9	34.2	24.3	47.2	30.8	34.4	14.4
Wyoming									
<b>Unweighted data</b>									
Alaska	19.4	38.8	16.4	24.8	15.7	42.5	27.8	36.6	15.7
California	40.2	47.7	25.0	28.6	27.3	60.1	41.9	45.9	17.8
Colorado	21.0	31.1	26.7	30.8	24.2	33.9	23.5	49.6	10.1
Georgia	23.7	44.5	26.1	33.3	25.0	53.4	26.7	46.4	15.4
Kansas	20.0	32.0	23.0	36.3	15.8	36.7	26.7	35.3	9.3
Louisiana <sup>‡</sup>	36.8	55.4	27.8	40.8	17.6	42.2	31.9	50.2	21.5
New Jersey	21.3	52.6	17.6	29.2	29.1	56.1	39.0	48.5	18.6
New York	39.3	54.4	39.3	23.1	23.9	47.8	30.4	43.4	14.3
Oregon	15.9	39.3	19.6	22.7	24.9	51.2	33.6	43.4	9.4
South Carolina	20.9	29.0	22.7	35.2	9.3	56.1	30.8	32.3	20.0
South Dakota	20.9	39.5	23.1	29.5					
State median	21.3	40.3	26.9	31.9	21.0	51.4	33.8	41.8	15.6



TABLE 8. Percentage of lead health education teachers who had attended  $\geq 4$  hours of in-service training in the previous 2 years on specific health education topics, selected U.S. sites — School Health Education Profiles, teachers' surveys, 1996 — Continued

Site	Tobacco-use prevention	Alcohol and other drug-use prevention	Dietary behaviors and nutrition	Physical activity and fitness	Pregnancy prevention	HIV* prevention	Other STD† prevention	Violence prevention	Suicide prevention
<b>LOCAL SURVEYS</b>									
<b>Weighted data</b>									
Chicago, IL	27.6	43.1	22.6	33.2	29.9	48.4	38.8	52.6	10.5
Dallas, TX	36.2	56.4	46.0	40.3	40.3	66.2	64.1	72.2	41.7
Ft. Lauderdale, FL	44.4	67.3	45.5	34.5	45.5	80.0	69.1	49.1	23.6
Houston, TX	47.9	63.3	40.3	83.9	44.2	91.2	78.1	77.1	38.0
Jersey City, NJ	37.3	70.2	40.5	36.7	29.5	77.7	52.0	66.8	48.3
Los Angeles, CA	40.8	30.9	20.5	13.6	21.3	76.1	61.6	32.9	21.1
Miami, FL	21.2	29.7	28.2	22.9	35.6	67.0	47.3	49.3	18.2
Newark, NJ	51.4	58.5	25.7	35.8	50.3	68.2	60.4	74.5	42.6
New Orleans, LA	45.8	75.0	45.8	66.7	54.2	95.8	91.7	83.3	50.0
Philadelphia, PA	3.3	43.3	13.3	50.0	43.3	60.0	56.7	60.0	13.3
San Diego, CA	100.0	100.0	11.6	11.6	69.8	97.7	81.4	93.0	46.5
San Francisco, CA	33.6	38.1	33.6	30.9	23.1	49.3	45.7	43.6	26.2
Washington, DC	46.5	60.2	48.0	56.4	51.1	87.5	60.6	72.8	22.5
<b>Local median</b>	<b>40.8</b>	<b>58.5</b>	<b>33.6</b>	<b>35.8</b>	<b>43.3</b>	<b>76.1</b>	<b>60.6</b>	<b>66.8</b>	<b>26.2</b>

\* Human immunodeficiency virus.

† Sexually transmitted disease.

‡ Survey did not include schools from the Orleans Parish School Board.

TABLE 9. Percentage of lead health education teachers who wanted in-service training on specific health education topics, selected U.S. sites — School Health Education Profiles, teachers' surveys, 1996

Site	Tobacco-use prevention	Alcohol and other drug-use prevention	Dietary behaviors and nutrition	Physical activity and fitness	Pregnancy prevention	HIV* prevention	Other STD* prevention	Violence prevention	Suicide prevention
<b>STATE SURVEYS</b>									
<b>Weighted data</b>									
Alabama	49.3	63.8	46.6	43.3	54.0	71.1	62.4	69.4	68.0
Arkansas	52.5	58.8	47.7	48.1	53.5	74.6	62.2	59.2	71.0
California	42.7	44.2	47.2	30.6	45.3	48.4	48.4	56.5	65.7
Connecticut	51.3	51.3	51.9	45.1	50.1	62.9	49.9	68.9	69.7
Delaware	35.8	60.5	53.9	41.1	47.8	68.8	57.3	73.3	78.5
Iowa	56.0	51.3	51.9	45.1	47.8	68.8	57.3	73.3	63.8
Kentucky	41.8	44.0	39.5	36.9	41.1	49.6	44.5	55.6	72.5
Maine	48.9	58.0	42.6	44.7	52.9	60.9	54.7	64.0	74.2
Massachusetts	51.2	52.4	37.3	31.6	45.8	45.0	56.6	62.2	77.4
Michigan	44.3	57.0	52.4	39.3	51.7	49.0	56.6	62.2	77.4
Minnesota	42.9	51.6	45.7	37.3	37.7	41.4	41.2	54.6	61.4
Missouri	44.5	53.1	42.0	38.1	46.6	50.2	55.8	51.4	64.1
Montana	43.6	53.9	43.7	36.0	45.6	66.9	55.4	55.8	61.8
Nebraska	47.1	48.2	51.5	46.6	42.6	58.1	55.7	68.2	66.5
New Hampshire	43.4	48.9	38.8	35.5	37.4	55.2	50.4	60.3	63.6
New Mexico	48.6	46.6	49.2	42.7	39.5	48.3	58.3	65.2	72.3
North Dakota	50.3	68.7	46.1	38.1	53.3	58.0	60.1	68.2	72.7
Ohio	43.9	50.0	43.5	39.2	36.0	52.3	53.6	59.2	64.7
Rhode Island	45.0	53.5	44.4	33.9	48.4	59.4	54.6	59.3	64.0
Tennessee	44.6	43.4	44.0	37.7	51.3	49.7	55.8	58.9	55.8
Utah	53.8	56.3	48.1	49.0	51.6	63.7	58.4	69.6	71.5
Washington	45.0	45.8	49.6	38.5	49.8	51.3	46.7	72.0	70.6
West Virginia	52.5	59.3	49.0	34.8	41.7	44.5	49.1	69.5	66.6
Wyoming	59.6	59.3	55.5	54.7	62.8	66.6	67.5	75.2	63.1
Unweighted data	44.7	51.8	50.3	38.6	40.0	44.7	53.1	59.9	62.0
Alaska	43.8	49.2	36.2	38.8	39.7	51.5	44.6	66.2	63.8
California	45.3	54.5	48.2	37.3	47.0	51.4	55.2	65.8	65.5
Colorado	48.3	55.2	47.5	36.7	43.2	49.6	52.1	63.6	72.0
Georgia	46.6	53.4	43.1	34.6	50.9	57.6	55.9	61.4	62.2
Kansas	49.0	58.6	52.3	43.8	48.4	58.7	55.6	58.8	64.3
Louisiana <sup>1</sup>	51.2	57.3	58.3	42.9	46.2	66.2	57.4	60.0	69.9
New Jersey	49.5	58.3	47.5	35.3	48.3	57.9	52.8	68.2	74.7
Oregon	38.8	46.6	44.4	31.2	47.7	48.6	44.6	61.7	68.5
South Carolina	43.1	55.9	55.1	48.3	44.1	58.0	54.1	61.8	70.7
South Dakota	48.8	50.0	46.2	43.5	52.7	52.3	55.4	66.7	73.1
State median	46.0	53.5	47.4	38.6	47.4	53.8	55.0	62.4	68.3

TABLE 9. Percentage of lead health education teachers who wanted in-service training on specific health education topics, selected U.S. sites — School Health Education Profiles, teachers' surveys, 1996 — Continued

Site	Tobacco-use prevention	Alcohol and other drug-use prevention	Dietary behaviors and nutrition	Physical activity and fitness	Pregnancy prevention	HIV* prevention	Other STD† prevention	Violence prevention	Suicide prevention
<b>LOCAL SURVEYS</b>									
<b>Weighted data</b>									
Chicago, IL	40.3	56.0	54.9	45.8	43.3	56.1	52.2	64.0	69.9
Dallas, TX	53.2	64.9	53.2	51.6	50.6	45.8	46.3	59.6	59.0
Ft. Lauderdale, FL	43.6	54.5	54.5	34.5	43.6	43.6	52.7	67.3	70.9
Houston, TX	56.4	62.1	55.5	54.2	59.4	63.8	62.0	60.2	85.0
Jersey City, NJ	47.1	48.9	54.1	53.5	56.8	43.2	39.9	81.9	78.3
Los Angeles, CA	36.3	56.9	51.1	26.6	41.3	35.9	45.4	67.9	59.9
Miami, FL	44.2	62.9	56.2	30.9	40.0	43.6	48.6	58.7	65.2
Newark, NJ	63.4	72.6	55.2	37.5	46.8	63.3	60.5	74.2	80.5
New Orleans, LA	55.0	65.0	73.7	47.4	81.8	63.6	73.7	80.0	85.7
Philadelphia, PA	55.2	60.0	46.7	63.3	73.3	83.3	66.7	80.0	83.3
San Diego, CA	55.8	69.8	23.3	30.2	46.5	58.1	57.1	81.4	53.5
San Francisco, CA	44.0	65.4	67.4	44.3	30.4	28.0	39.8	67.9	67.4
Washington, DC	46.7	52.6	56.4	52.5	60.8	61.3	62.6	68.7	81.3
<b>Local median</b>	<b>47.1</b>	<b>62.1</b>	<b>54.9</b>	<b>45.8</b>	<b>46.8</b>	<b>56.1</b>	<b>52.7</b>	<b>67.9</b>	<b>70.9</b>

\* Human immunodeficiency virus.

† Sexually transmitted disease.

‡ Survey did not include schools from the Orleans Parish School Board.

**TABLE 10. Percentage of schools that received parental feedback on health education and among those schools, the percentage that received each specific type of feedback, selected U.S. sites — School Health Education Profiles, principals' surveys, 1996**

Site	Received parental feedback	Type of parental feedback received*		
		Mainly positive	Mainly negative	Equally positive and negative
STATE SURVEYS				
Weighted data†				
Alabama	37.4	83.9	1.4	14.8
Arkansas	46.6	84.4	0	15.6
California	56.9	90.3	1.9	7.9
Connecticut	63.9	89.1	2.0	8.9
Delaware	70.7	83.1	0	16.9
Idaho	62.4	88.9	2.8	8.3
Iowa	54.0	85.3	3.9	10.8
Kentucky	48.2	87.4	2.2	10.4
Louisiana‡	37.6	81.5	1.0	17.5
Maine	62.2	84.7	1.6	13.7
Massachusetts	67.1	89.4	1.1	9.4
Michigan	59.0	88.9	1.8	9.2
Minnesota	64.0	88.0	3.0	9.1
Missouri	49.5	90.3	0	9.7
Montana	53.6	82.1	1.9	16.0
Nebraska	44.9	86.8	1.0	12.2
New Hampshire	66.5	87.4	0.9	11.7
New Mexico	64.5	78.7	3.0	18.3
North Dakota	52.3	92.0	0	8.0
Ohio	52.6	86.1	1.6	12.2
Rhode Island	61.0	86.2	2.0	11.7
South Carolina	48.1	85.2	1.8	13.0
South Dakota	44.6	85.1	3.9	11.1
Tennessee	60.9	80.7	1.7	17.5
Utah	64.3	96.0	0	4.0
Washington	61.0	80.5	1.9	17.6
West Virginia	59.1	88.1	0.9	11.0
Wyoming	59.7	80.9	1.2	18.0
Unweighted data†				
Alaska	54.0	78.4	1.1	20.5
Colorado	65.1	84.2	3.2	12.6
Georgia	59.3	87.1	0	12.9
Indiana	57.9	90.7	2.4	6.8
Kansas	53.3	83.9	2.4	13.7
New Jersey	62.5	88.7	0	11.3
Oregon	60.3	84.0	2.9	13.1
State median	59.1	86.1	1.7	12.2
LOCAL SURVEYS				
Weighted data†				
Chicago, IL	49.7	81.2	2.9	15.9
Dallas, TX	35.3	92.3	0	7.7
Ft. Lauderdale, FL	56.4	93.5	0	6.5
Houston, TX	44.1	95.1	0	4.9
Jersey City, NJ	42.9	83.1	0	16.9
Los Angeles, CA	61.7	89.1	1.8	9.1
Miami, FL	51.3	92.5	0	7.5
Newark, NJ	55.5	83.9	0	16.1
New Orleans, LA	54.2	100.0	0	0.0
Philadelphia, PA	35.5	81.8	9.1	9.1
San Diego, CA	67.4	93.1	0	6.9
San Francisco, CA	68.8	90.9	4.6	4.5
Washington, DC	54.8	95.9	0	4.1
Local median	54.2	92.3	0	7.5

\*Among those schools that received feedback.

†Percentages for each row might not add up to 100.0 because of rounding.

‡Survey did not include schools from the Orleans Parish School Board.

**TABLE 11. Percentage of schools that involved parents in required health education courses, selected U.S. sites — School Health Education Profiles, teachers' surveys, 1996**

Site	Sent parents health-related educational materials	Sent parents newsletters on health-related topics	Invited parents to attend health education classes or health fairs	Offered health programs for parents
<b>STATE SURVEYS</b>				
<b>Weighted data</b>				
Alabama	40.7	33.2	31.6	19.4
Arkansas	33.3	21.6	25.9	17.1
Connecticut	48.5	45.5	45.1	39.2
Delaware	53.4	41.4	53.9	20.2
Idaho	44.2	37.1	45.8	23.5
Iowa	45.2	48.8	33.9	21.2
Kentucky	42.7	35.0	39.7	25.0
Maine	51.5	42.5	39.2	27.8
Massachusetts	57.9	58.4	47.9	49.1
Michigan	49.3	50.3	41.2	30.0
Minnesota	55.4	45.2	40.6	27.8
Missouri	48.8	37.7	33.4	26.2
Montana	38.2	40.0	33.9	21.4
Nebraska	48.4	42.7	36.8	21.3
New Hampshire	54.9	51.9	44.7	36.1
New Mexico	55.3	50.4	67.2	27.1
North Dakota	40.6	35.4	33.1	28.3
Ohio	48.3	36.6	42.6	20.9
Rhode Island	48.7	42.1	48.1	33.8
Tennessee	54.9	43.6	38.5	22.0
Utah	68.7	38.6	43.0	27.6
Washington	55.4	44.6	47.3	26.8
West Virginia	57.7	52.9	50.3	28.0
Wyoming	52.9	44.0	47.3	18.4
<b>Unweighted data</b>				
Alaska	55.6	43.9	55.6	25.0
California	58.7	51.5	45.5	36.7
Colorado	48.8	53.7	46.7	22.0
Georgia	62.0	51.7	56.4	28.9
Kansas	48.6	42.1	36.1	19.4
Louisiana*	43.8	36.7	28.4	16.7
New Jersey	58.3	48.6	52.1	38.9
Oregon	53.2	53.4	46.2	22.9
South Carolina	56.9	52.2	50.0	23.1
South Dakota	46.3	33.3	40.3	27.5
<b>State median</b>	<b>50.4</b>	<b>43.8</b>	<b>43.9</b>	<b>25.6</b>
<b>LOCAL SURVEYS</b>				
<b>Weighted data</b>				
Chicago, IL	61.9	58.0	44.0	39.1
Dallas, TX	63.9	54.9	49.0	37.3
Ft. Lauderdale, FL	58.2	57.4	54.5	20.4
Houston, TX	68.4	61.8	74.9	40.3
Jersey City, NJ	73.4	67.1	52.2	38.9
Los Angeles, CA	90.2	58.1	66.6	40.1
Miami, FL	72.4	64.0	51.4	35.6
Newark, NJ	78.2	76.2	79.3	65.1
New Orleans, LA	69.6	61.9	69.6	34.8
Philadelphia, PA	67.9	69.0	65.5	37.9
San Diego, CA	62.8	79.1	53.5	55.8
San Francisco, CA	82.8	82.8	79.0	76.2
Washington, DC	68.4	48.6	80.8	52.4
<b>Local median</b>	<b>68.4</b>	<b>61.9</b>	<b>65.5</b>	<b>39.1</b>

\*Survey did not include schools from the Orleans Parish School Board.

TABLE 12. Percentage of schools that required human immunodeficiency virus (HIV) education be taught as part of a required health education course and among those schools, the percentage of schools that taught specific topics, selected U.S. sites — School Health Education Profiles, teachers' surveys, 1996

Site	Taught HIV education	HIV education topic taught*			
		How HIV is and is not transmitted	Reasons for choosing sexual abstinence	Condom efficiency	Correct use of condoms
STATE SURVEYS					
Weighted data					
Alabama	88.2	98.9	95.9	61.7	33.4
Arkansas	81.4	100.0	95.1	77.0	33.4
Connecticut	98.5	98.5	97.1	78.4	58.4
Delaware	95.6	100.0	100.0	84.6	65.4
Idaho	86.9	98.8	90.9	83.4	24.6
Iowa	95.0	99.4	95.9	83.7	54.7
Kentucky	80.3	99.2	95.4	68.4	40.7
Maine	96.8	99.4	97.1	84.5	62.3
Massachusetts	96.6	99.4	96.7	75.7	53.4
Michigan	96.3	98.4	97.1	78.1	47.3
Minnesota	99.0	99.4	99.1	80.5	50.1
Missouri	88.8	100.0	96.2	75.5	41.5
Montana	89.8	98.6	93.7	68.8	39.7
Nebaska	83.7	98.3	94.4	66.3	36.4
New Hampshire	92.7	100.0	100.0	75.4	64.2
New Mexico	97.7	99.1	97.7	75.4	45.2
North Dakota	87.2	100.0	97.9	61.6	53.8
Ohio	94.8	99.7	97.0	79.0	29.7
Rhode Island	100.0	100.0	98.4	80.9	62.4
Tennessee	94.2	99.6	96.1	66.3	37.6
Utah	92.9	98.9	96.6	48.6	7.9
Washington	94.6	99.7	99.3	92.7	56.8
West Virginia	96.0	99.4	96.9	73.0	50.1
Wyoming	91.9	100.0	97.0	66.6	34.8
Unweighted data					
Alaska	89.0	96.4	93.6	67.6	51.4
California	95.2	98.9	97.2	93.7	61.6
Colorado	92.6	100.0	97.2	76.2	51.4
Georgia	92.3	98.6	97.2	69.3	39.5
Kansas	94.3	100.0	99.6	72.2	44.6
Louisiana†	65.3	96.9	92.2	43.8	22.0
New Jersey	99.7	99.6	97.9	81.7	63.5
Oregon	98.8	99.2	97.1	77.5	49.2
South Carolina	94.8	99.0	97.0	74.4	53.3
South Dakota	94.0	100.0	97.6	59.3	33.3
State median	94.3	99.4	97.0	75.5	48.3

TABLE 12. Percentage of schools that required human immunodeficiency virus (HIV) education be taught as part of a required health education course and among those schools, the percentage of schools that taught specific topics, selected U.S. sites — School Health Education Profiles, teachers' surveys, 1996 — Continued

Site	Taught HIV education	How HIV is and is not transmitted	HIV education topic taught*		
			Reasons for choosing sexual abstinence	Condom efficiency	Correct use of condoms
LOCAL SURVEYS					
Weighted data					
Chicago, IL	84.4	99.2	92.7	64.9	51.6
Dallas, TX	96.9	100.0	94.2	70.8	42.3
Ft. Lauderdale, FL	98.1	100.0	94.3	71.7	60.4
Houston, TX	94.9	98.3	98.3	84.2	62.1
Jersey City, NJ	100.0	100.0	100.0	76.6	64.8
Los Angeles, CA	100.0	100.0	98.9	84.1	72.5
Miami, CA	100.0	100.0	98.2	96.4	78.2
Newark, NJ	90.2	97.3	97.3	85.9	62.9
New Orleans, LA	100.0	100.0	100.0	90.9	91.3
Philadelphia, PA	100.0	100.0	100.0	72.4	69.0
San Diego, CA	100.0	100.0	100.0	100.0	100.0
San Francisco, CA	89.8	100.0	100.0	92.3	84.5
Washington, DC	95.0	100.0	97.2	77.9	75.1
Local median	98.1	100.0	98.3	84.1	69.0

\* Among those schools that taught HIV education.

<sup>†</sup> Survey did not include schools from the Orleans Parish School Board.

TABLE 13. Percentage of schools with a written policy from their school or school district on human immunodeficiency virus (HIV)-infected students or school staff and among those schools, topics addressed in the policy, selected U.S. sites — School Health Education Profiles, principals' surveys, 1996

Site	Topic addressed by the written policy*						Inappropriate- ness of routine testing for HIV infection
	Had a written policy	Confidentiality†	Protection from discrimination†	Worksite safety	Evaluation of health status†	Communication of policy to students, staff, and parents	
STATE SURVEYS							
Weighted data							
Alabama	70.3	95.5	93.0	93.5	68.4	80.4	47.4
Arkansas	46.4	91.8	96.7	86.8	72.7	72.3	37.1
California	62.1	94.9	90.4	94.9	62.2	77.2	32.0
Connecticut	77.6	95.9	90.1	94.5	64.6	72.4	29.6
Delaware	75.8	97.2	86.8	86.8	62.1	59.6	27.6
Idaho	62.9	85.1	84.8	85.9	71.9	56.3	22.8
Iowa	67.9	90.4	86.2	91.5	70.8	77.5	36.0
Kentucky	45.7	93.0	83.8	91.4	63.1	73.3	41.2
Louisiana <sup>‡</sup>	49.3	92.6	89.5	84.0	55.4	75.8	39.9
Maine	83.6	95.8	90.4	95.9	61.3	68.3	23.9
Massachusetts	71.9	98.7	94.0	94.6	67.9	81.5	38.4
Michigan	66.1	94.3	91.7	95.7	66.1	75.6	36.5
Minnesota	66.3	98.0	93.9	95.0	71.7	85.7	36.1
Missouri	77.9	96.4	91.4	92.3	79.1	79.0	36.5
Montana	64.1	96.7	92.8	92.4	70.7	79.6	35.3
Nebraska	69.5	92.4	89.8	92.7	72.6	76.5	34.3
New Hampshire	88.2	95.1	93.5	89.3	71.1	71.7	30.8
New Mexico	68.6	90.4	87.4	94.8	51.9	73.0	36.4
North Dakota	63.3	93.9	89.0	87.6	61.3	77.7	28.4
Ohio	71.2	95.1	89.1	93.9	79.3	72.5	39.2
Rhode Island	86.6	100.0	95.6	95.7	79.0	75.7	38.8
South Carolina	72.1	95.2	90.0	95.1	74.4	69.6	55.0
South Dakota	61.4	84.8	83.6	83.4	65.4	71.2	29.5
Tennessee	75.6	94.0	91.3	94.7	71.5	78.8	58.1
Utah	75.2	97.2	97.9	96.0	71.4	77.0	49.6
Washington	78.8	96.1	88.8	93.6	60.7	77.7	42.2
West Virginia	60.1	95.7	94.1	95.0	75.2	86.9	40.7
Wyoming	83.5	92.6	95.6	92.5	57.6	58.1	25.7
Unweighted data							
Alaska	58.2	94.7	92.0	92.2	50.0	71.4	34.7
Colorado	79.7	92.4	83.5	90.3	67.3	69.6	29.3
Georgia	71.8	92.0	90.1	90.7	69.6	80.2	50.6
Indiana	68.0	94.8	89.8	98.6	61.4	74.2	36.7



TABLE 13. Percentage of schools with a written policy from their school or school district on human immunodeficiency virus (HIV)-infected students or school staff and among those schools, topics addressed in the policy, selected U.S. sites — School Health Education Profiles, principals' surveys, 1996 — Continued

Site	Had a written policy	Topic addressed by the written policy*					Inappropriate-ness of routine testing for HIV infection
		Confidentiality†	Protection from discrimination†	Worksite safety	Evaluation of health status†	Communication of policy to students, staff, and parents	
Kansas	53.7	92.0	84.8	91.4	72.1	73.5	32.9
New Jersey	68.5	97.8	92.1	92.6	61.6	76.0	37.5
Oregon	89.4	96.7	92.7	98.4	72.4	88.4	33.2
State median	69.5	94.9	90.4	92.7	68.4	75.7	36.4
<b>LOCAL SURVEYS</b>							
<b>Weighted data</b>							
Chicago, IL	89.6	98.8	97.6	96.5	77.7	84.4	62.4
Dallas, TX	67.6	100.0	92.2	77.2	62.0	71.0	40.5
Ft. Lauderdale, FL	83.0	93.0	95.3	90.7	41.9	69.0	31.0
Houston, TX	71.8	100.0	100.0	97.0	77.9	93.1	67.2
Jersey City, NJ	71.9	100.0	94.4	94.4	52.7	83.3	33.0
Los Angeles, LA	96.1	98.7	98.6	97.3	89.2	94.6	73.3
Miami, FL	90.9	100.0	100.0	98.4	65.5	95.0	72.7
Newark, NJ	73.7	96.5	88.7	95.9	72.4	85.0	47.8
New Orleans, LA	81.0	100.0	100.0	92.9	66.7	93.3	64.3
Philadelphia, PA	79.3	100.0	94.7	78.9	64.7	78.9	44.4
San Diego, CA	100.0	100.0	100.0	100.0	97.6	100.0	4.8
San Francisco, CA	82.8	100.0	100.0	100.0	55.6	72.0	66.4
Washington, DC	82.5	96.7	92.7	92.7	53.0	74.8	24.6
Local median	82.5	100.0	97.6	95.9	65.5	84.4	47.8

\* Among those schools or school districts that had a written policy.

† Of HIV-infected students and school staff.

‡ Survey did not include schools from the Orleans Parish School Board.



## Multistate Surveillance for Food-Handling, Preparation, and Consumption Behaviors Associated with Foodborne Diseases: 1995 and 1996 BRFSS Food-Safety Questions

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### Abstract

**Problem/Condition:** In 1995, CDC, the Food and Drug Administration (FDA), and several state health departments collaboratively developed questions regarding food safety. This set of questions was used to collect data about food-handling, preparation, and consumption behaviors that have been associated with foodborne diseases in adults. These data will help characterize persons at high risk for foodborne illness and assist in developing food-safety education strategies for consumers and foodhandlers that are intended to reduce foodborne illness.

**Reporting Period Covered:** January 1995–December 1996.

**Description of System:** Data were collected by using the 12 food-safety questions, which were administered with the 1995 Behavioral Risk Factor Surveillance Systems (BRFSS) in Colorado, Florida, Missouri, New York, and Tennessee, and the 1996 BRFSS in Indiana and New Jersey. In addition, data were collected in South Dakota from two of the standardized questions that deal with consumption of undercooked eggs and pink hamburgers. The BRFSS is a state-based system that surveys noninstitutionalized adults by telephone about their health behaviors and practices.

**Results:** This study included 19,356 completed questionnaires (2,461 in Colorado; 3,335 in Florida; 2,212 in Indiana; 1,572 in Missouri; 3,149 in New Jersey; 2,477 in New York; 2,110 in South Dakota; and 2,040 in Tennessee). During the previous 12 months, 50.2% of respondents reported eating undercooked eggs (95% confidence interval [CI] = 49.2–51.2); 23.8% reported eating home-canned vegetables (95% CI = 22.5–24.5); 19.7% reported eating pink hamburgers (95% CI = 18.9–20.5); 8.0% reported eating raw oysters (95% CI = 7.5–8.5); and 1.4% reported drinking raw milk (95% CI = 1.2–1.6). The prevalence of not washing hands with soap after handling raw meat or chicken and not washing a cutting board with soap or bleach after using it for cutting raw meat or chicken were 18.6% (95% CI = 17.8–19.4) and 19.5% (95% CI = 18.6–20.4), respectively. Less than half of respondents (45.4%, 95% CI = 44.2–46.6) reported seeing safe food-handling label information on raw meat products. In addition, among those persons who reported they remembered seeing the label information, 77.2% (95% CI = 76.0–78.4) remembered reading the label information, and 36.7% reported changing their meat and poultry preparation habits because of the labels (95% CI = 35.2–38.2). When population characteristics were considered in the analysis, all high-risk food-handling, preparation, and consumption behaviors were more prevalent in men than in women. Eating pink hamburgers during the previous 12 months was more commonly reported by whites (22.3%) than by blacks (6.5%). The prevalence of reported consumption of pink hamburgers during the previous 12 months decreased with age (18–29 years: 21.8%, 30–59 years: 21.9%, and 60–99 years: 13.2%); increased with education (less than grade 12: 12.0%, high school graduate: 16.5%, and any college education: 24.0%); and increased with income (<\$15,000: 11.8%, \$15,000–\$34,999: 17.6%, \$35,000–\$49,999: 22.0%, and ≥\$50,000: 28.6%).

**Interpretation:** During 1995–1996, several high-risk food-handling, preparation, and consumption behaviors were common, and some were particular to specific population groups. Based on this analysis, interventions are needed to reduce the prevalence of these risky behaviors. All consumers and foodhandlers could benefit from food-safety education.

**Actions Taken:** Behavioral surveillance systems can provide data that identify persons or groups in which behaviors associated with foodborne diseases are more common and who are at higher risk for foodborne illness. State-specific data can assist in developing food-safety education programs and, if collected periodically, can be used to evaluate program effectiveness.

## INTRODUCTION

Foodborne illness is a substantial problem in the United States. Each year, an estimated 6.5–33 million persons become ill from foodborne diseases, and up to 9,000 die (1). One strategy to reduce foodborne illness involves implementing food-safety education programs for consumers and foodhandlers. These education programs should include approaches that focus on reducing the prevalence of food-handling, preparation, and consumption behaviors associated with foodborne diseases. Safe food-handling, preparation, and consumption behaviors are important for persons who are particularly susceptible to foodborne illness, including pregnant women, young children, older adults, immunocompromised persons, and persons with reduced access to medical care (e.g., persons with low socioeconomic status). To aid in designing

these programs, data are required that identify the population groups in which these risky behaviors are more common. Limited data have been collected to monitor these behaviors and to assess risk reduction secondary to educational campaigns. The Behavioral Risk Factor Surveillance System (BRFSS) can be used to provide such data. The BRFSS has been widely used to determine the prevalence of personal health behaviors — including those among specific population groups — related to morbidity and mortality from both chronic and acute disease (2).

## METHODS

### Sources of Data for Food-Handling, Preparation, and Consumption Behaviors

Data were collected through a standard set of 12 food-safety questions that were added to the 1995 BRFSS in Colorado, Florida, Missouri, New York, and Tennessee, and to the 1996 BRFSS in Indiana and New Jersey. South Dakota added two of the standardized questions (one regarding undercooked egg consumption and one regarding pink-hamburger consumption) to its 1996 BRFSS (Appendix). The BRFSS is a state-based system that surveys noninstitutionalized adults ( $\geq 18$  years of age) by telephone about their health behaviors and practices, using random-digit-dialing techniques. The BRFSS uses either a three-stage cluster sampling design based on the Waksburg Method or the disproportionate stratified random sampling method (3,4).

The set of food-safety questions included a) two questions about actions taken after handling raw meat or chicken; b) six questions about consumption of specific high-risk food items (i.e., home-canned vegetables, pink hamburgers, undercooked eggs, raw oysters, and raw milk); c) three questions about respondents' awareness of safe food-handling labels on raw meat products and any changes in their raw meat or poultry preparation methods after reading these labels; and d) one question about the occurrence of diarrhea. (Data collected for the question regarding diarrhea will not be discussed in this summary.)

The BRFSS coordinator for each participating state sent data to CDC for review and analysis. Descriptive analyses were performed using SAS\* (5) and SUDAAN† (6), and a weighting factor was assigned to each survey respondent. This weighting factor adjusted for the respondent's probability of selection and age-, race-, and sex-specific population from the 1990 census data and was used to estimate the prevalence of high-risk food-handling, preparation, and consumption behaviors for each state's population (7,8).

## Definitions

For analysis of the two questions about actions taken after handling raw meat or chicken, responses were categorized as follows: a) persons who usually "continue cooking" or "rinse and/or wipe hands then continuing cooking" after handling raw

\*SAS, a computer software for data access, management, analysis, and presentation; for additional information, contact SAS Institute, Inc., SAS Campus Drive, Cary, NC 27513.

†SURvey DATA Analysis, a computer software for the statistical analysis of correlated data; for additional information, contact Research Triangle Institute, 3040 Cornwallis Road, Research Triangle Park, NC 27709 (Telephone: 919-541-6000).

meat or chicken were classified as persons who usually do not wash hands with soap after handling raw meat or chicken; b) persons who usually "continue using a cutting surface as is" or "rinse and/or wipe cutting surface, then continue cooking" after using the cutting board, counter top, or other surface for cutting raw meat or chicken were classified as persons who usually do not wash cutting boards with soap or bleach after using it to cut raw meat or chicken. For analysis of the question about pink-hamburger consumption during the previous 12 months, persons who responded that they had "never" eaten a hamburger during the previous 12 months also were classified as not having eaten a pink hamburger during the previous 12 months.

The variable for residential area was created by matching the county of the respondent's residence with Economic Research Service (ERS) rural-urban continuum codes (i.e., Beale codes). These ERS rural-urban continuum codes divide counties in the United States into nine groups. For our survey data, central counties of a metropolitan area (counties with at least 50% of the population of a central city), were classified as urban areas. Other counties in metropolitan areas with populations of 1 million persons also were classified as urban areas (1993 Beale codes = 0, 1, 2, and 3). Fringe counties of a metropolitan area (counties where at least 50% of the employed workers residing in the county commute to the central county/counties) were classified as suburban or small town areas. Counties with populations of  $\geq 20,000$  persons that were not adjacent to metropolitan areas also were classified as suburban or small town areas (1993 Beale codes = 4, 5, and 6). The remaining counties with populations of 2,500–19,999 not adjacent to metropolitan areas or completely rural counties (total population <2,500 persons) were classified as rural areas (1993 Beale codes = 7, 8, and 9) (9,10).

In general, participant responses were excluded from analysis if a participant responded "don't know," "not sure," or refused to answer the question. For analysis of hand-washing, responses were excluded from analysis if participants reported they had "other" hand-washing techniques not provided on the questionnaire or they did not handle raw meat or chicken. Similarly, for analysis of the cutting board question, responses were excluded from analysis if participants had "other" cutting board washing techniques not provided on the questionnaire or they did not cut raw meat or chicken.

## RESULTS

In this study, 19,356 interviews were completed (2,461 in Colorado; 3,335 in Florida; 2,212 in Indiana; 1,572 in Missouri; 3,149 in New Jersey; 2,477 in New York; 2,110 in South Dakota; and 2,040 in Tennessee) (Table 1). The results of this surveillance system are presented for each of the food-safety questions by state (Table 2) and by state and population characteristics (Tables 3–13). During the previous 12 months, 50.2% of respondents reported eating undercooked eggs (95% confidence interval [CI] = 49.2–51.2); 23.8% reported eating home-canned vegetables (95% CI = 23.0–24.6); 19.7% reported eating pink hamburgers (95% CI = 18.9–20.5); 8.0% reported eating raw oysters (95% CI = 7.5–8.5); and 1.4% reported drinking raw milk (95% CI = 1.2–1.6). The prevalence of not washing hands with soap after handling raw meat or chicken and not washing a cutting board with soap or bleach after using it for raw meat or chicken

were 18.6% (95% CI = 17.8–19.4) and 19.5% (95% CI = 18.6–20.4), respectively. In addition, 45.4% (95% CI = 44.2–46.6) of respondents remembered seeing safe food-handling label information on packages of meat and poultry, and 36.7% (95% CI = 33.8–39.6) of those who remembered seeing the label reported that the label information changed their meat and poultry preparation methods.

The prevalence of several behaviors associated with foodborne diseases varied by state. For example, the prevalence of reported consumption of pink hamburgers and undercooked eggs during the previous 12 months and the prevalence of not washing hands with soap or not washing the cutting board after contact with raw meat or chicken were higher in Colorado respondents than in respondents from the other six states in which this question was asked on their BRFSS. During the previous 12 months, a higher percentage of participants from Tennessee than from any other state reported eating home-canned vegetables, and consumption of raw oysters was reported more commonly in Florida than in any other state. The proportion of respondents who remembered seeing the safe food-handling label information was lowest in New York (36.4%, 95% CI = 34.2–38.6) and highest in Missouri (54.6%, 95% CI = 51.6–57.6). Of the respondents who remembered seeing the label information, the proportion who remembered reading the label was lower in Indiana (72.9%) than in any other state (Colorado: 73.0%; Missouri: 74.5%; Florida: 76.0%; New Jersey: 77.3%; New York: 80.4%; and Tennessee: 83.0%).

Some high-risk food-handling, preparation, and consumption behaviors were more common in specific population groups (Tables 3–13). For example, the prevalence of reported consumption of pink hamburgers was higher among men (24.3%) than among women (15.6%) and among whites (22.3%) than among any other race (Asians/Pacific Islanders: 13.7%; Hispanics: 13.5%; and blacks: 6.5%). The prevalence of several food-consumption behaviors associated with foodborne diseases decreased with age, increased with education, and increased with yearly salary. For example, the prevalence of consumption of pink hamburgers decreased with age (18–29 years: 21.8%, 30–59 years: 21.9%, and 60–99 years: 13.2%); increased with education (less than grade 12: 12.0%, high school graduate: 16.5, and any college education: 24.0%); and increased with yearly salary (<\$15,000: 11.8%, \$15,000–\$34,999: 17.6%, \$35,000–\$49,999: 22.0%, and ≥\$50,000: 28.6%). Similar patterns with age, education, and income were found for food-handling and preparation behaviors associated with foodborne diseases. In addition, awareness of safe food-handling label information was more common in certain population groups. Of respondents who remembered seeing label information, the proportion who remembered reading label information was higher in women (82.4%) than in men (68.7%) and higher in whites (78.7%) than in other races (Asians/Pacific Islanders: 74.3%; blacks: 74.1%; and Hispanics: 66.7%).



## DISCUSSION

### General Interpretation of Surveillance Data for Food-Handling, Preparation, and Consumption Behaviors Associated with Foodborne Diseases

The survey data described in this report indicate that several behaviors associated with foodborne diseases were common in 1995 and 1996. For example, approximately 50% of respondents reported eating undercooked eggs during the previous 12 months, and 20% reported not washing the cutting board with soap or bleach after using it for cutting raw meat or chicken. Prevalence estimates in previous studies differ from those in this study. In a nationwide survey conducted in 1993, the estimated prevalence of not washing hands after handling raw meat or chicken was higher than that from our survey (37% versus 19%, respectively) (11). In this nationwide survey conducted in 1993, 23% of survey respondents reported serving pink hamburgers in their homes (12). In 1986, a study in Oregon indicated that 23% of home food preparers reported serving rare hamburger (13), and in 1991, a study in Nebraska indicated that 42% of survey respondents did not prepare hamburgers to a well-done stage (14). In the survey described in this report, the prevalence of reported consumption of pink hamburgers was 19.6% during the previous 12 months. A study based on the 1992 California BRFSS indicated that 23% of respondents reported eating raw shellfish (15); in comparison, the survey described in this report indicated that in 1995 and in 1996, 8% of respondents reported eating raw oysters during the previous 12 months. Differences in survey design and methodology might explain some of the differences between prevalence estimates in previous studies and those in this survey. However, our survey estimates demonstrate that although some high-risk food-handling and consumption behaviors were still common in 1995 and 1996, they might have been improving.

Prevalence of high-risk behaviors varied among the states. Regional differences in high-risk food-handling, preparation, and consumption behaviors might result from socioeconomic or cultural differences and variations between state laws enacted to discourage risky behaviors.

The findings of this survey indicate that high-risk food-handling, preparation, and consumption behaviors were more common in certain population groups. All behaviors associated with foodborne diseases were more prevalent in men than in women. Other studies support this finding (11,14). In a 1991 study in Nebraska in which safer behaviors were assigned higher scores, men demonstrated lower food-handling scores than women (14). The 1993 FDA Health and Diet Survey indicated that men were less likely than women to wash their hands after handling raw meat or poultry (53% versus 75%) (11). In our survey, prevalence of high-risk food-handling, preparation, and consumption behaviors also varied by age group, race/ethnicity, socioeconomic status, and residential area. Results from previous studies agree with our survey in that the prevalence of high-risk food-handling, preparation, and consumption practices (except eating undercooked eggs) increased as age decreased (11,12,15). Similar to our survey, a previous study found that consumption of pink hamburgers is more common in whites than in any other racial/ethnic group (12).



In our survey, a direct relation was observed between education level and the frequencies of some high-risk food-handling, preparation, and consumption behaviors (e.g., consumption of pink hamburgers or raw oysters and failure to wash hands or cutting boards after contact with raw meat or chicken). These findings contrast with findings that persons with an education beyond high school are more likely than other persons to pursue other health-promoting behaviors (e.g., using seat belts, abstaining from cigarette smoking, and engaging in regular exercise) (12). This difference in results suggests that some highly educated persons might not know or choose to ignore the hazards associated with behaviors that have been related to foodborne diseases. Despite knowing the hazards associated with high-risk behaviors, highly educated persons might continue to perform such behaviors because of cultural influences or social norms. Decisions about behavior frequently are guided by risk perception rather than risk awareness (16). Factors that can influence risk perception include media coverage, opinions of scientific experts and peer groups, perceived control over risk, and knowledge about a potential hazard (16).

Persons can be aware of risks but choose to continue such behaviors if they believe they or others can control the risk. A food-safety survey of 2,197 homemakers concluded that homemakers rely on government inspection for the prevention of bacterial contamination of raw meat and poultry. Perceiving that the hazards in raw meat and poultry were controlled, many homemakers in the study underrated their responsibility for safe food-handling and preparation practices and were not aware of the sources of pathogens in the environment and in the human body (14). Furthermore, persons might believe that, although negative events occur, such events are relatively unlikely to harm them personally (16). In a 1991 national consumer survey, participants thought food-safety problems were most likely to occur at food manufacturing facilities (34%), followed by restaurants (32%), and homes (16%) (17).

## Limitations

The findings in this report are subject to at least two limitations. First, because the analysis is based on self-reported data, the findings might be subject to reporting bias: respondents might have answered questions according to what they perceive as being the correct answer rather than what they actually practice. Second, this analysis did not address possible confounders, such as socioeconomic status (e.g., education and annual income), of the relation between other population characteristics and high-risk food-handling, preparation, and consumption behaviors. Further analysis that adjusts for socioeconomic status will be conducted.

## CONCLUSIONS

This survey found that the prevalence of behaviors associated with foodborne diseases vary by sex, age, race/ethnicity, education and income. In addition, this survey presents data indicating that persons who might be more susceptible to foodborne illness were more likely to have safer food-handling, preparation, or consumption practices than those who usually are perceived to be less susceptible to foodborne illness.

The results of this survey should be used in conjunction with results from studies that evaluate risk perception and knowledge of food-safety issues to develop foodborne disease intervention and prevention strategies. These strategies should be aimed at persons who are more susceptible to foodborne illness, more likely to perform behaviors associated with foodborne diseases, more likely to perceive personal invulnerability to foodborne illness, and more likely to have little or no knowledge of food safety. Future surveys should include questions that assess consumers' and foodhandlers' perceptions of risk, food-preparation experience, and knowledge of food safety.

All consumers could benefit from food-safety education. To effectively decrease foodborne illness, strategies should reduce the prevalence of behaviors associated with foodborne diseases, increase consumers' awareness of risks from foodborne illness, and motivate them to change their high-risk behaviors.

Behavioral surveillance systems can provide data to assist in identifying persons in which behaviors associated with foodborne diseases are more common. Since 1996, some states have voluntarily added all or some of the standard 12 food-safety questions to their BRFSS. For example, for the first time, Arizona added the full set of 12 food-safety questions; Idaho added the question about hand washing; and Vermont added the question about consumption of raw milk to their 1997 BRFSS. In 1997, New York added to its BRFSS the same questions about hamburger and pink-hamburger consumption that were asked during administration of its 1995 BRFSS to monitor the prevalence of hamburger and pink-hamburger consumption and evaluate the effectiveness of its slogan, "It's clear, a safer hamburger is cooked brown in the middle." That these states and others will add food-safety questions to their BRFSS in future years to monitor trends in high-risk consumer behaviors and assess the effectiveness of food-safety education strategies is anticipated.

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TABLE 1. Percentage distribution of demographic characteristics among respondents to the food-safety questions, by state and characteristic — Behavioral Risk Factor Surveillance System (BRFSS), 1995 and 1996\*

Characteristic	Colorado (n = 2,461)	Florida (n = 3,335)	Indiana (n = 2,212)	Missouri (n = 1,572)	New Jersey (n = 3,149)	New York (n = 2,477)	South Dakota (n = 2,110)	Tennessee (n = 2,040)	Total (n = 19,356)
<b>Sex</b>									
Men	41.7	41.4	42.6	38.4	42.4	40.4	42.6	40.7	41.4
Women	58.3	58.6	57.4	61.6	57.6	59.6	57.4	59.3	58.6
<b>Age (yrs)</b>									
18-29	16.2	15.9	19.6	17.9	16.1	19.1	17.0	19.3	17.4
30-59	57.5	52.4	54.1	53.9	59.7	57.2	51.5	55.6	55.4
≥60	26.1	31.5	26.2	27.5	23.3	23.0	31.1	24.5	26.7
Unknown	0.2	0.3	0.1	0.7	1.0	0.8	0.3	0.6	0.5
<b>Race/Ethnicity</b>									
White	81.8	76.7	88.7	87.6	75.3	73.3	93.7	84.3	81.6
Black	2.0	9.6	7.1	8.0	11.3	13.6	0.4	13.5	8.4
Asian/Pacific Islander	0.9	1.0	0.5	0.8	2.5	3.2	0.2	0.6	1.3
Hispanic	14.0	11.5	2.5	2.0	8.5	8.1	1.5	1.2	6.9
Other	1.2	1.1	0.9	1.2	1.5	1.5	3.9	0.2	1.4
Unknown	0.2	0.2	0.3	0.3	0.8	0.4	0.2	0.3	0.4
<b>Education</b>									
Less than grade 12	14.3	13.2	14.4	12.4	10.1	18.9	12.8	21.3	14.5
High school graduate	30.6	33.1	36.6	36.2	31.6	27.1	33.8	36.5	32.9
Any college	54.7	53.4	48.9	49.6	57.9	53.7	53.3	42.0	52.3
Unknown	0.4	0.3	0.1	1.8	0.4	0.3	0.1	0.3	0.4
<b>Yearly salary</b>									
<\$15,000	14.8	14.0	11.7	20.1	7.2	11.0	13.9	14.2	12.9
\$15,000-\$34,999	36.1	38.4	34.9	38.5	28.0	31.2	41.1	41.2	36.0
\$35,000-\$49,999	16.1	15.2	20.2	15.7	16.0	15.9	14.7	14.7	16.0
≥\$50,000	20.2	18.3	22.8	15.1	33.6	25.0	11.7	13.7	20.9
Unknown	10.3	14.1	10.4	10.6	15.2	16.9	16.7	16.3	14.2
<b>Residential area</b>									
Urban	58.1	92.0	72.4	64.5	100.0	92.1	32.2	70.1	77.6
Suburban/small town	13.0	6.1	21.4	14.0	0	7.0	12.5	17.2	10.7
Rural	28.4	1.7	6.2	21.2	0	0.7	54.3	12.6	11.4
Unknown	0.5	0.2	0	0.3	0	0.3	1.1	0.2	0.3
<b>Total</b>	<b>12.7</b>	<b>17.2</b>	<b>11.4</b>	<b>8.1</b>	<b>16.3</b>	<b>12.8</b>	<b>10.9</b>	<b>10.5</b>	<b>100.0</b>

\* Twelve standard food-safety questions were added to the 1995 BRFSS in Colorado, Florida, Missouri, New York, and Tennessee and to the 1996 BRFSS in Indiana and New Jersey. Two food-consumption questions were added to the 1996 BRFSS in South Dakota.

TABLE 2. Percentage distribution of responses to survey questions regarding food safety, by state — Behavioral Risk Factor Surveillance System (BRFSS), 1995 and 1996\*

Category	Colorado		Florida		Indiana		Missouri		New Jersey		New York		South Dakota		Tennessee		Total	
	%	(95% CI) <sup>†</sup>	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Consumption of high-risk foods during the previous 12 months																		
Home-canned vegetables	29.5	(±2.4)	17.8	(±1.5)	35.0	(±2.3)	38.7	(±2.8)	17.6	(±1.7)	16.0	(±1.9)	—	—	46.5	(±2.5)	23.8	(±0.8)
Hamburgers	92.9	(±1.4)	87.4	(±1.3)	94.7	(±0.9)	95.9	(±1.1)	85.8	(±1.5)	81.1	(±1.7)	—	—	87.8	(±1.7)	86.3	(±0.7)
Pink hamburgers	28.8	(±2.5)	21.2	(±1.6)	15.5	(±1.8)	16.6	(±2.2)	22.7	(±1.8)	20.4	(±1.8)	24.1	(±2.0)	9.6	(±1.5)	19.7	(±0.8)
Undercooked eggs	62.0	(±2.5)	51.2	(±1.9)	47.8	(±2.3)	56.3	(±2.7)	47.6	(±2.2)	48.0	(±2.3)	47.4	(±2.3)	47.3	(±2.5)	50.2	(±1.0)
Raw oysters	7.1	(±1.3)	10.6	(±1.2)	5.1	(±1.0)	4.8	(±1.2)	8.2	(±1.1)	8.6	(±1.3)	—	—	5.9	(±1.0)	8.0	(±0.5)
Raw milk	1.6	(±0.7)	1.1	(±0.4)	1.0	(±0.5)	2.2	(±0.8)	1.1	(±0.5)	1.4	(±0.5)	—	—	1.7	(±0.7)	1.4	(±0.2)
High-risk food-handling and preparation practices																		
Not washing hands with soap after handling raw meat or chicken	22.6	(±2.5)	19.7	(±1.7)	15.9	(±1.8)	18.9	(±2.3)	16.2	(±1.7)	19.6	(±2.0)	—	—	14.5	(±1.8)	18.6	(±0.8)
Not washing cutting surface with soap/bleach after using it for cutting raw meat or chicken	28.2	(±2.7)	19.1	(±1.7)	19.5	(±2.0)	20.6	(±2.5)	15.9	(±1.6)	19.1	(±2.0)	—	—	19.6	(±3.0)	19.5	(±0.9)
Awareness of safe food-handling labels and the effect of those labels on meat preparation																		
Remembered seeing label information on uncooked meat or poultry	47.6	(±2.6)	52.0	(±1.9)	45.2	(±2.3)	54.6	(±3.0)	45.8	(±2.2)	36.4	(±2.2)	—	—	48.8	(±2.5)	45.4	(±1.2)
Of persons who remembered seeing label, remembered reading label	73.0	(±3.3)	76.0	(±2.4)	72.9	(±3.1)	74.5	(±3.4)	77.3	(±2.6)	80.4	(±2.9)	—	—	83.0	(±2.7)	77.2	(±1.2)

\* Twelve standard food-safety questions were added to the 1955 BRFSS in Colorado, Florida, Missouri, New York, and Tennessee and to the 1996 BRFSS in Indiana and New Jersey. Two food-consumption questions were added to the 1996 BRFSS in South Dakota.

<sup>†</sup> Confidence interval.

TABLE 3. Percentage of respondents who reported eating home-canned vegetables during the previous 12 months, by demographic characteristics and state — food-safety questions, Behavioral Risk Factor Surveillance System (BRFSS), 1995 and 1996\*

	Colorado (n = 2,384)	Florida (n = 2,255)	Indiana (n = 2,123)	Missouri (n = 1,533)	New Jersey (n = 2,914)	New York (n = 2,454)	Tennessee (n = 1,979)	Total (n = 16,642)
	% (95% CI) <sup>†</sup>	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
<b>Sex</b>								
Men <sup>‡</sup>	32.5 (± 3.8)	19.1 (± 2.5)	37.4 (± 3.5)	41.4 (± 4.3)	18.5 (± 2.7)	17.9 (± 2.8)	45.5 (± 3.8)	25.3 (± 1.3)
Women	26.5 (± 3.0) <sup>§</sup>	16.7 (± 1.9)	32.9 (± 2.8) <sup>§</sup>	36.2 (± 3.7)	16.8 (± 2.1)	14.5 (± 2.6)	47.5 (± 3.2)	22.5 (± 1.1) <sup>§</sup>
<b>Age (yrs)</b>								
18-29 <sup>‡</sup>	35.4 (± 6.2)	26.0 (± 4.4)	39.3 (± 5.2)	41.1 (± 6.4)	29.0 (± 5.5)	20.8 (± 5.3)	45.3 (± 5.7)	29.7 (± 2.3)
30-59	29.0 (± 3.0)	18.5 (± 2.1) <sup>§</sup>	34.6 (± 3.2)	39.8 (± 3.7)	15.8 (± 1.9)	15.8 (± 2.3)	45.2 (± 3.3)	23.7 (± 1.1) <sup>§</sup>
≥60	23.7 (± 4.5) <sup>§</sup>	11.6 (± 2.2) <sup>§</sup>	32.0 (± 4.4) <sup>§</sup>	34.7 (± 5.3)	12.6 (± 2.7)	12.4 (± 3.3) <sup>§</sup>	51.4 (± 4.9)	19.4 (± 1.4) <sup>§</sup>
<b>Race/Ethnicity</b>								
White <sup>‡</sup>	29.3 (± 2.6)	17.7 (± 1.8)	36.6 (± 2.5)	38.7 (± 2.8)	16.5 (± 1.9)	15.9 (± 2.2)	48.1 (± 2.7)	24.6 (± 0.9)
Black	17.2 (± 12.8)	20.9 (± 5.2)	21.5 (± 7.5) <sup>§</sup>	34.6 (± 10.1)	20.8 (± 5.6)	13.2 (± 4.2)	37.1 (± 6.4) <sup>§</sup>	20.5 (± 2.5)
Asian/Pacific Islander	21.6 (± 19.4)	16.0 (± 14.2)	11.5 (± 16.4) <sup>§</sup>	60.4 (± 30.6)	26.2 (± 12.0)	23.8 (± 12.4)	30.6 (± 40.0)	24.8 (± 8.0)
Hispanic	33.8 (± 7.2)	16.6 (± 4.3)	20.9 (± 12.4) <sup>§</sup>	40.5 (± 20.1)	20.6 (± 6.2)	21.5 (± 7.5)	57.3 (± 23.3)	21.8 (± 3.2)
<b>Education</b>								
Less than grade 12 <sup>‡</sup>	28.0 (± 6.6)	17.1 (± 4.2)	35.1 (± 5.7)	39.5 (± 8.1)	17.6 (± 5.4)	14.1 (± 4.0)	50.2 (± 5.3)	23.6 (± 2.1)
High school graduate	32.3 (± 4.6)	20.3 (± 2.7)	37.1 (± 3.8)	40.8 (± 4.6)	18.4 (± 3.4)	15.7 (± 3.0)	49.8 (± 4.1)	26.1 (± 1.4)
Any college	28.4 (± 3.2)	16.6 (± 2.1)	33.5 (± 3.2)	37.5 (± 3.9)	17.2 (± 2.1)	17.0 (± 2.9)	42.1 (± 3.8) <sup>§</sup>	22.6 (± 1.2)
<b>Yearly salary</b>								
<\$15,000 <sup>‡</sup>	26.9 (± 7.0)	20.7 (± 4.6)	27.7 (± 6.4)	39.9 (± 6.8)	21.8 (± 7.3)	21.6 (± 10.0)	47.7 (± 6.6)	27.7 (± 3.8)
\$15,000-\$34,999	31.8 (± 4.2)	18.2 (± 2.4)	37.3 (± 3.8)	41.5 (± 4.5)	19.4 (± 3.7)	17.6 (± 3.1)	48.4 (± 3.7)	25.8 (± 1.6)
\$35,000-\$49,999	31.0 (± 5.8)	19.4 (± 3.8)	40.3 (± 4.9) <sup>§</sup>	39.2 (± 6.4)	20.0 (± 4.3)	21.6 (± 4.5)	48.7 (± 6.6)	26.6 (± 2.4)
>\$50,000	28.3 (± 4.8)	16.5 (± 3.4)	32.7 (± 4.5)	31.2 (± 6.7)	14.5 (± 2.5)	13.4 (± 3.3)	39.0 (± 6.4)	20.2 (± 2.0) <sup>§</sup>
<b>Residential area</b>								
Urban <sup>‡</sup>	26.5 (± 2.7)	16.8 (± 1.6)	30.9 (± 2.7)	32.5 (± 3.4)	17.6 (± 1.7)	15.0 (± 1.9)	41.5 (± 2.9)	20.2 (± 1.1)
Suburban/small town	43.2 (± 9.1) <sup>§</sup>	28.0 (± 7.1) <sup>§</sup>	43.3 (± 4.7) <sup>§</sup>	44.8 (± 7.1) <sup>§</sup>	—	26.5 (± 7.1) <sup>§</sup>	53.5 (± 6.1) <sup>§</sup>	36.9 (± 3.6) <sup>§</sup>
Rural	39.6 (± 6.4) <sup>§</sup>	37.3 (± 16.0) <sup>§</sup>	51.7 (± 7.7) <sup>§</sup>	53.1 (± 6.1) <sup>§</sup>	—	50.8 (± 23.3) <sup>§</sup>	63.7 (± 6.5) <sup>§</sup>	51.6 (± 3.8) <sup>§</sup>
<b>Total</b>	<b>29.5 (± 2.4)</b>	<b>17.8 (± 1.5)</b>	<b>35.0 (± 2.3)</b>	<b>38.7 (± 2.8)</b>	<b>17.6 (± 1.7)</b>	<b>16.0 (± 1.9)</b>	<b>46.5 (± 2.5)</b>	<b>23.8 (± 0.8)</b>

\* Twelve standard food-safety questions were added to the 1995 BRFSS in Colorado, Florida, Missouri, New York, and Tennessee and to the 1996 BRFSS in Indiana and New Jersey. Two food-consumption questions were added to the 1996 BRFSS in South Dakota.

<sup>†</sup> Confidence interval.

<sup>‡</sup> Referent group.

<sup>§</sup> Significantly different from referent group,  $p < 0.05$ .

TABLE 4. Percentage of respondents who reported eating hamburgers during the previous 12 months, by demographic characteristics and state — food-safety questions, Behavioral Risk Factor Surveillance System (BRFSS), 1995 and 1996\*

	Colorado (n = 2,362)	Florida (n = 3,252)	Indiana (n = 2,115)	Missouri (n = 1,519)	New Jersey (n = 2,094)	New York (n = 2,441)	Tennessee (n = 1,980)	Total (n = 16,563)
	% (95% CI) <sup>†</sup>	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
<b>Sex</b>								
Male <sup>‡</sup>	95.3 (± 1.4)	88.3 (± 1.9)	96.4 (± 1.2)	97.1 (± 1.5)	89.4 (± 2.0)	84.6 (± 2.5)	87.4 (± 2.8)	88.3 (± 1.2)
Female	90.5 (± 2.2) <sup>‡</sup>	86.6 (± 1.8)	93.1 (± 1.4) <sup>‡</sup>	94.8 (± 1.5) <sup>‡</sup>	82.5 (± 2.3)	77.8 (± 2.4) <sup>‡</sup>	88.1 (± 1.9)	84.5 (± 1.1) <sup>‡</sup>
<b>Age (yrs)</b>								
18-29 <sup>‡</sup>	93.6 (± 3.5)	92.1 (± 2.7)	96.7 (± 1.5)	97.6 (± 2.0)	86.9 (± 3.4)	88.7 (± 3.1)	91.6 (± 3.6)	91.3 (± 1.6)
30-59	93.5 (± 1.6)	89.0 (± 1.8)	96.9 (± 1.0)	96.8 (± 1.5)	88.0 (± 1.8)	83.1 (± 2.2) <sup>‡</sup>	89.2 (± 2.2) <sup>‡</sup>	87.9 (± 1.1) <sup>‡</sup>
≥60	89.9 (± 3.0)	81.5 (± 2.7) <sup>‡</sup>	87.0 (± 3.0) <sup>‡</sup>	92.9 (± 2.6) <sup>‡</sup>	80.0 (± 3.7)	69.2 (± 2.6) <sup>‡</sup>	80.1 (± 3.7) <sup>‡</sup>	78.7 (± 2.0) <sup>‡</sup>
<b>Race/Ethnicity</b>								
White <sup>‡</sup>	93.6 (± 1.3)	90.2 (± 1.3)	95.1 (± 0.9)	96.7 (± 1.0)	88.2 (± 1.6)	84.3 (± 1.8)	88.7 (± 1.7)	88.9 (± 0.8)
Black	77.6 (± 14.2) <sup>‡</sup>	80.4 (± 5.5) <sup>‡</sup>	93.7 (± 4.1)	91.6 (± 5.3)	82.2 (± 4.7)	70.5 (± 5.7) <sup>‡</sup>	87.9 (± 4.3)	77.5 (± 3.3) <sup>‡</sup>
Asian/Pacific Islander	83.4 (± 16.0)	73.4 (± 18.1)	63.3 (± 27.8) <sup>‡</sup>	67.0 (± 34.5)	67.6 (± 13.1)	76.3 (± 10.4)	42.8 (± 34.3) <sup>‡</sup>	74.2 (± 8.4) <sup>‡</sup>
Hispanic	93.8 (± 4.3)	76.8 (± 4.7) <sup>‡</sup>	96.5 (± 4.0)	98.0 (± 4.0)	76.3 (± 6.1)	77.2 (± 6.3) <sup>‡</sup>	62.4 (± 27.6) <sup>‡</sup>	79.5 (± 3.3) <sup>‡</sup>
<b>Education</b>								
Less than grade 12 <sup>‡</sup>	92.9 (± 3.4)	80.7 (± 4.3)	92.8 (± 3.1)	95.4 (± 3.1)	79.2 (± 5.0)	73.0 (± 4.6)	84.9 (± 3.6)	79.7 (± 0.8)
High school graduate	93.6 (± 2.3)	88.8 (± 2.2) <sup>‡</sup>	95.5 (± 1.4)	96.1 (± 1.7)	86.4 (± 2.5)	80.9 (± 3.2) <sup>‡</sup>	91.2 (± 2.4) <sup>‡</sup>	87.6 (± 1.4) <sup>‡</sup>
Any college	92.5 (± 1.8)	88.1 (± 1.8) <sup>‡</sup>	94.6 (± 1.4)	95.9 (± 1.7)	86.7 (± 2.0)	84.0 (± 2.2) <sup>‡</sup>	86.5 (± 2.9)	87.5 (± 1.1) <sup>‡</sup>
<b>Yearly salary</b>								
<\$15,000 <sup>‡</sup>	84.3 (± 2.3)	84.2 (± 3.7)	86.7 (± 4.3)	95.5 (± 2.5)	78.8 (± 6.5)	77.9 (± 5.6)	83.2 (± 4.6)	84.3 (± 2.3)
\$15,000-34,999	86.7 (± 1.4)	87.9 (± 2.1)	95.1 (± 1.5) <sup>‡</sup>	97.5 (± 1.2)	84.8 (± 2.8)	79.6 (± 3.2)	88.9 (± 2.6) <sup>‡</sup>	86.7 (± 1.4)
\$35,000-49,999	90.1 (± 1.8)	91.9 (± 2.6) <sup>‡</sup>	97.8 (± 1.4) <sup>‡</sup>	96.1 (± 2.8)	86.5 (± 3.4)	86.3 (± 3.8) <sup>‡</sup>	89.1 (± 4.8)	90.1 (± 1.8) <sup>‡</sup>
≥\$50,000	88.5 (± 1.6) <sup>‡</sup>	88.8 (± 2.7) <sup>‡</sup>	95.0 (± 2.0) <sup>‡</sup>	94.7 (± 3.7)	89.3 (± 2.5)	86.2 (± 2.8) <sup>‡</sup>	87.5 (± 4.3)	88.5 (± 1.6)
<b>Residential area</b>								
Urban <sup>‡</sup>	92.3 (± 1.6)	87.1 (± 1.4)	94.0 (± 1.2)	95.7 (± 1.5)	85.8 (± 1.5)	80.3 (± 1.8)	87.4 (± 2.1)	85.3 (± 0.9)
Suburban/small town	96.1 (± 3.7)	91.8 (± 5.0)	95.6 (± 1.7)	97.0 (± 2.3)	—	90.3 (± 3.8) <sup>‡</sup>	86.6 (± 4.3)	91.3 (± 2.0) <sup>‡</sup>
Rural	95.1 (± 2.7)	87.7 (± 8.6)	98.9 (± 1.6) <sup>‡</sup>	96.0 (± 2.2)	—	85.9 (± 17.2)	91.4 (± 3.5)	93.4 (± 1.8) <sup>‡</sup>
<b>Total</b>	92.9 (± 1.4)	87.4 (± 1.3)	94.7 (± 0.9)	95.9 (± 1.1)	85.8 (± 1.5)	81.1 (± 1.7)	87.8 (± 1.7)	86.3 (± 0.8)

\* Twelve standard food-safety questions were added to the 1995 BRFSS in Colorado, Florida, Missouri, New York, and Tennessee and to the 1996 BRFSS in Indiana and New Jersey. Two food-consumption questions were added to the 1996 BRFSS in South Dakota.

<sup>†</sup> Confidence interval.<sup>‡</sup> Referent group.<sup>§</sup> Significantly different from referent group,  $p < 0.05$ .



TABLE 5. Percentage of respondents who reported eating pink hamburgers during the previous 12 months, by demographic characteristics and state — food-safety questions, Behavioral Risk Factor Surveillance System (BRFSS), 1995 and 1996\*

	Colorado (n = 2,327)		Florida (n = 3,207)		Indiana (n = 2,053)		Missouri (n = 1,504)		New Jersey (n = 2,877)		New York (n = 2,430)		South Dakota (n = 2,033)		Tennessee (n = 1,980)		Total (n = 16,563)	
	%	(95% CI) <sup>†</sup>	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
<b>Sex</b>																		
Male	37.2	(± 4.0)	25.4	(± 2.7)	20.3	(± 2.9)	22.6	(± 3.8)	26.2	(± 2.9)	24.7	(± 3.0)	33.6	(± 3.4)	12.1	(± 2.5)	24.3	(± 3.3)
Female	20.5	(± 2.8)	17.4	(± 1.9)	11.3	(± 2.0)	11.4	(± 2.3)	19.5	(± 2.1)	16.5	(± 2.1)	15.3	(± 2.2)	7.4	(± 1.7)	15.6	(± 3.9)
<b>Age (yrs)</b>																		
18-29 <sup>‡</sup>	32.4	(± 6.0)	24.8	(± 4.3)	19.3	(± 4.1)	21.4	(± 6.2)	22.0	(± 4.6)	20.9	(± 4.5)	33.3	(± 5.4)	11.9	(± 3.3)	21.8	(± 2.0)
30-59	31.8	(± 3.3)	23.2	(± 2.2)	16.5	(± 2.4)	18.1	(± 2.9)	25.4	(± 2.4)	23.1	(± 2.5)	27.0	(± 2.8)	10.5	(± 2.0)	21.9	(± 1.1)
≥60	13.8	(± 4.0)	15.4	(± 2.5)	8.8	(± 2.7)	9.9	(± 3.3)	17.8	(± 3.2)	13.5	(± 3.1)	11.0	(± 2.9)	4.8	(± 2.3)	13.2	(± 1.2)
<b>Race/Ethnicity</b>																		
White <sup>§</sup>	31.3	(± 2.9)	24.7	(± 2.0)	16.0	(± 1.9)	17.6	(± 2.4)	26.2	(± 2.1)	24.3	(± 2.2)	24.5	(± 2.1)	10.7	(± 1.7)	22.3	(± 0.9)
Black	3.5	(± 4.8)	6.7	(± 4.2)	8.0	(± 5.5)	5.5	(± 5.2)	8.6	(± 3.4)	6.8	(± 3.6)	0 <sup>¶</sup>	—	3.6	(± 2.9)	6.5	(± 1.9)
Asian/ Asian/Pacific Islander	19.8	(± 17.7)	10.5	(± 10.7)	11.7	(± 19.2)	27.7	(± 34.9)	6.2	(± 4.9)	16.4	(± 8.6)	48.2	(± 45.5)	0 <sup>¶</sup>	—	13.7	(± 5.4)
Hispanic	18.2	(± 5.8)	12.0	(± 3.5)	18.5	(± 13.2)	13.3	(± 12.3)	14.8	(± 6.3)	13.0	(± 5.7)	15.1	(± 12.9)	7.2	(± 10.7)	13.5	(± 2.9)
<b>Education</b>																		
Less than grade 12 <sup>‡</sup>	14.9	(± 5.2)	14.8	(± 4.0)	11.6	(± 4.0)	11.0	(± 5.0)	15.4	(± 5.2)	11.5	(± 3.4)	15.5	(± 5.4)	5.3	(± 2.4)	12.0	(± 1.7)
High school graduate	27.7	(± 4.7)	18.2	(± 2.6)	12.0	(± 2.6)	14.4	(± 3.4)	18.2	(± 2.9)	17.4	(± 3.2)	20.9	(± 3.4)	7.8	(± 2.2)	16.5	(± 1.3)
Any college	32.1	(± 3.4)	24.5	(± 2.3)	19.3	(± 2.7)	20.1	(± 3.4)	26.6	(± 2.5)	25.2	(± 2.7)	28.0	(± 2.8)	13.1	(± 2.7)	24.0	(± 1.2)
<b>Yearly salary</b>																		
<\$15,000 <sup>‡</sup>	14.5	(± 5.1)	12.5	(± 3.5)	11.6	(± 4.4)	12.4	(± 4.8)	16.6	(± 6.9)	10.5	(± 4.4)	18.4	(± 5.3)	6.0	(± 3.3)	11.8	(± 1.8)
\$15,000-34,999	25.8	(± 4.0)	20.9	(± 2.6)	10.8	(± 2.5)	16.9	(± 3.6)	16.9	(± 3.1)	18.5	(± 3.1)	25.4	(± 3.3)	8.2	(± 2.0)	17.6	(± 1.3)
\$35,000-49,999	35.8	(± 5.9)	24.3	(± 4.1)	18.1	(± 3.9)	16.5	(± 5.0)	24.3	(± 4.6)	22.7	(± 4.6)	24.2	(± 4.9)	10.8	(± 3.8)	22.0	(± 1.9)
≥\$50,000	36.5	(± 5.6)	31.3	(± 4.3)	20.8	(± 3.9)	24.3	(± 6.0)	30.2	(± 3.3)	29.8	(± 4.1)	32.5	(± 6.4)	15.9	(± 5.1)	28.6	(± 1.9)
<b>Residential area</b>																		
Urban <sup>‡</sup>	28.5	(± 2.9)	21.3	(± 1.7)	15.9	(± 2.1)	18.8	(± 2.9)	22.7	(± 1.8)	20.1	(± 1.9)	24.6	(± 3.6)	10.4	(± 1.9)	20.2	(± 0.9)
Suburban/ small town	26.6	(± 8.4)	19.5	(± 5.7)	15.0	(± 3.8)	8.1	(± 4.4)	—	—	25.3	(± 6.7)	24.3	(± 5.7)	8.7	(± 3.4)	17.0	(± 2.4)
Rural	30.9	(± 6.3)	18.0	(± 14.0)	12.9	(± 6.1)	15.8	(± 4.7)	—	—	8.5	(± 10.6)	23.8	(± 2.7)	6.8	(± 3.1)	16.8	(± 2.4)
<b>Total</b>	<b>28.8</b>	<b>(± 2.5)</b>	<b>21.2</b>	<b>(± 1.6)</b>	<b>15.5</b>	<b>(± 1.8)</b>	<b>16.6</b>	<b>(± 2.1)</b>	<b>22.7</b>	<b>(± 1.8)</b>	<b>20.4</b>	<b>(± 1.8)</b>	<b>24.1</b>	<b>(± 2.0)</b>	<b>9.6</b>	<b>(± 1.5)</b>	<b>19.7</b>	<b>(± 0.8)</b>

\* Twelve standard food-safety questions were added to the 1995 BRFSS in Colorado, Florida, Missouri, New York, and Tennessee and to the 1996 BRFSS in Indiana and New Jersey. Two food-consumption questions were added to the 1996 BRFSS in South Dakota.

† Confidence interval.

‡ Referent group.

§ Significantly different from referent group,  $p < 0.05$ .



TABLE 6. Percentage of respondents who reported eating undercooked eggs during the previous 12 months, by demographic characteristics and state — food-safety questions, Behavioral Risk Factor Surveillance System (BRFSS), 1995 and 1996\*

	Colorado (n = 2,370)	Florida (n = 3,264)	Indiana (n = 2,155)	Missouri (n = 1,529)	New Jersey (n = 2,910)	New York (n = 2,447)	South Dakota (n = 2,023)	Tennessee (n = 1,864)	Total (n = 18,562)
	% (95% CI) <sup>†</sup>	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
<b>Sex</b>									
Male <sup>‡</sup>	66.7 (± 3.7)	53.4 (± 3.0)	53.6 (± 3.5)	61.9 (± 4.3)	50.7 (± 3.3)	52.4 (± 3.5)	53.5 (± 3.6)	49.1 (± 3.8)	54.0 (± 1.5)
Female	57.4 (± 3.4) <sup>§</sup>	49.1 (± 2.5) <sup>§</sup>	42.6 (± 3.0) <sup>§</sup>	51.4 (± 3.5) <sup>§</sup>	44.8 (± 2.7) <sup>§</sup>	44.1 (± 2.9) <sup>§</sup>	41.8 (± 2.9) <sup>§</sup>	45.7 (± 3.4)	46.7 (± 1.3) <sup>§</sup>
<b>Age (yrs)</b>									
18-29 <sup>§</sup>	65.6 (± 5.7)	52.8 (± 5.0)	47.8 (± 5.2)	55.8 (± 6.1)	43.9 (± 5.5)	43.8 (± 5.4)	49.2 (± 5.6)	48.3 (± 5.8)	49.0 (± 2.4)
30-59	51.0 (± 3.2)	50.7 (± 2.6)	51.0 (± 3.1)	59.8 (± 3.6)	46.8 (± 2.7)	50.0 (± 3.0) <sup>§</sup>	49.5 (± 3.3)	48.1 (± 3.3)	51.2 (± 1.3)
≥60	60.8 (± 5.1)	50.8 (± 3.4)	40.7 (± 4.4) <sup>§</sup>	49.4 (± 5.3)	53.0 (± 4.3) <sup>§</sup>	47.6 (± 4.6)	41.6 (± 4.2) <sup>§</sup>	43.7 (± 5.2)	49.0 (± 1.9)
<b>Race/Ethnicity</b>									
White <sup>§</sup>	62.5 (± 2.7)	52.9 (± 2.1)	48.5 (± 2.4)	56.3 (± 2.9)	46.7 (± 2.4)	48.8 (± 2.7)	47.7 (± 2.4)	49.5 (± 2.7)	51.0 (± 1.1)
Black	43.4 (± 6.9)	40.0 (± 6.3) <sup>§</sup>	38.4 (± 8.7) <sup>§</sup>	48.5 (± 0.0)	43.3 (± 6.5)	39.1 (± 6.1) <sup>§</sup>	7.5 (± 14.8) <sup>§</sup>	31.8 (± 7.0) <sup>§</sup>	39.5 (± 3.2) <sup>§</sup>
Asian/ Pacific Islander	62.8 (± 25.0)	51.6 (± 20.3)	61.6 (± 37.3)	53.5 (± 35.5)	57.3 (± 13.3)	55.7 (± 12.2)	88.4 (± 22.5) <sup>§</sup>	71.8 (± 29.8)	56.3 (± 8.1)
Hispanic	60.8 (± 7.1)	49.6 (± 5.9)	49.4 (± 15.1)	75.7 (± 13.5) <sup>§</sup>	57.8 (± 7.2) <sup>§</sup>	52.0 (± 8.4)	37.5 (± 18.5)	41.9 (± 26.3)	53.1 (± 3.8)
<b>Education</b>									
Less than grade 12 <sup>§</sup>	62.4 (± 7.2)	49.2 (± 5.5)	46.1 (± 6.3)	53.7 (± 7.6)	51.5 (± 6.7)	50.4 (± 5.0)	42.7 (± 7.0)	48.4 (± 5.7)	50.4 (± 2.5)
High school graduate	62.2 (± 4.6)	51.6 (± 3.4)	48.1 (± 3.8)	56.7 (± 4.5)	48.3 (± 3.8)	49.3 (± 4.3)	48.7 (± 4.1)	47.4 (± 4.0)	50.8 (± 1.7)
Any college	61.8 (± 3.3)	51.3 (± 2.6)	48.2 (± 3.2)	56.7 (± 3.9)	46.7 (± 2.8)	46.4 (± 3.2)	47.6 (± 3.2)	46.6 (± 3.9)	49.7 (± 1.4)
<b>Yearly salary</b>									
<\$15,000 <sup>§</sup>	63.4 (± 7.0)	51.7 (± 5.2)	37.7 (± 6.5)	56.6 (± 6.5)	49.9 (± 8.1)	53.2 (± 8.7)	48.8 (± 6.6)	45.9 (± 7.0)	51.8 (± 3.1)
\$15,000-\$34,999	59.8 (± 4.2)	52.0 (± 3.1)	48.3 (± 3.9) <sup>§</sup>	59.3 (± 4.2)	49.7 (± 4.2)	50.5 (± 4.0)	50.8 (± 3.6)	48.4 (± 3.8)	51.9 (± 1.6)
\$35,000-\$49,999	61.1 (± 5.8)	52.8 (± 4.9)	50.2 (± 4.9) <sup>§</sup>	59.2 (± 6.9)	49.0 (± 5.2)	52.8 (± 5.6)	47.9 (± 6.0)	53.1 (± 6.1)	53.0 (± 1.3)
>\$50,000	64.9 (± 5.0)	53.6 (± 4.4)	51.1 (± 4.7) <sup>§</sup>	53.8 (± 7.1)	48.3 (± 3.6)	46.5 (± 4.4)	49.5 (± 6.4)	51.1 (± 6.5)	50.5 (± 2.0)
<b>Residential area</b>									
Urban <sup>§</sup>	61.3 (± 2.9)	51.1 (± 2.0)	46.7 (± 2.6)	54.7 (± 3.4)	47.6 (± 2.2)	47.7 (± 2.4)	44.4 (± 4.0)	47.9 (± 3.0)	49.7 (± 1.1)
Suburban/ small town	64.8 (± 8.6)	50.2 (± 8.1)	51.3 (± 4.9)	55.2 (± 6.3)	—	50.9 (± 7.1)	49.3 (± 6.3)	45.9 (± 6.0)	51.2 (± 2.8)
Rural	66.1 (± 5.9)	60.0 (± 13.5)	48.0 (± 9.8)	62.2 (± 5.7) <sup>§</sup>	—	53.6 (± 23.6)	48.8 (± 3.2)	46.0 (± 7.1)	56.2 (± 3.1) <sup>§</sup>
<b>Total</b>	62.0 (± 2.5)	51.2 (± 1.9)	47.8 (± 2.3)	56.3 (± 2.7)	47.6 (± 2.2)	48.0 (± 2.3)	47.4 (± 2.3)	47.3 (± 2.5)	50.2 (± 1.0)

\*Twelve standard food-safety questions were added to the 1995 BRFSS in Colorado, Florida, Missouri, New York, and Tennessee and to the 1996 BRFSS in Indiana and New Jersey. Two food-consumption questions were added to the 1996 BRFSS in South Dakota.

<sup>†</sup>Confidence interval.<sup>‡</sup>Referent group.<sup>§</sup>Significantly different from referent group,  $p < 0.05$ .

TABLE 7. Percentage of respondents who reported eating raw oysters during the previous 12 months, by demographic characteristics and state — food-safety questions, Behavioral Risk Factor Surveillance System (BRFSS), 1995 and 1996\*

	Colorado (n = 2,391)	Florida (n = 3,281)	Indiana (n = 2,185)	Missouri (n = 1,550)	New Jersey (n = 2,946)	New York (n = 2,457)	Tennessee (n = 2,002)	Total (n = 16,812)
	% (95% CI) <sup>†</sup>	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
<b>Sex</b>								
Male <sup>‡</sup>	9.9 (± 2.3)	13.7 (± 2.0)	7.4 (± 1.8)	7.6 (± 2.3)	11.6 (± 2.0)	12.3 (± 2.3)	8.6 (± 1.9)	11.2 (± 1.0)
Female	4.4 (± 1.3) <sup>§</sup>	7.7 (± 1.4) <sup>§</sup>	3.0 (± 1.1) <sup>§</sup>	2.2 (± 1.0) <sup>§</sup>	5.1 (± 1.1) <sup>§</sup>	5.3 (± 1.2) <sup>§</sup>	3.6 (± 1.1) <sup>§</sup>	5.2 (± 0.5) <sup>§</sup>
<b>Age (yrs)</b>								
18-29 <sup>‡</sup>	7.7 (± 3.4)	14.6 (± 3.4)	6.4 (± 2.4)	5.6 (± 3.4)	7.6 (± 2.8)	11.0 (± 3.4)	5.0 (± 2.0)	9.7 (± 1.5)
30-59	7.8 (± 1.6)	12.1 (± 1.8)	5.3 (± 1.4)	5.9 (± 1.7)	9.3 (± 1.5)	9.5 (± 1.7)	7.5 (± 1.6)	9.1 (± 0.7)
>60	4.0 (± 2.7)	5.4 (± 1.6) <sup>§</sup>	3.3 (± 1.5) <sup>§</sup>	1.6 (± 1.3) <sup>§</sup>	6.4 (± 2.1)	4.2 (± 1.8) <sup>§</sup>	2.8 (± 1.5)	4.4 (± 0.8) <sup>§</sup>
<b>Race/Ethnicity</b>								
White <sup>‡</sup>	6.8 (± 1.4)	10.9 (± 1.4)	5.3 (± 1.1)	4.7 (± 1.3)	8.7 (± 1.3)	9.0 (± 1.5)	6.5 (± 1.2)	8.2 (± 0.6)
Black	4.1 (± 6.5)	4.8 (± 2.8) <sup>§</sup>	1.4 (± 2.7) <sup>§</sup>	1.6 (± 2.4) <sup>§</sup>	4.4 (± 2.5) <sup>§</sup>	1.6 (± 1.7) <sup>§</sup>	3.1 (± 2.5) <sup>§</sup>	2.9 (± 1.1) <sup>§</sup>
Asian/Pacific Islander	21.6 (± 18.8)	14.6 (± 13.0)	33.4 (± 36.3)	0 <sup>§</sup>	9.9 (± 8.1)	21.9 (± 11.3) <sup>§</sup>	3.7 (± 7.4)	17.6 (± 7.0) <sup>§</sup>
Hispanic	6.9 (± 4.1)	12.0 (± 4.2)	3.3 (± 6.3)	12.0 (± 13.8)	7.2 (± 3.7)	10.2 (± 4.4)	2.2 (± 4.3)	9.8 (± 2.3)
<b>Education</b>								
Less than grade 12 <sup>‡</sup>	6.0 (± 3.8)	6.8 (± 2.7)	3.5 (± 2.4)	1.2 (± 1.7)	4.0 (± 2.3)	4.2 (± 2.2)	2.5 (± 1.5)	4.5 (± 1.1)
High school graduate	3.2 (± 1.6)	7.6 (± 1.8)	3.2 (± 1.3)	1.8 (± 1.1)	5.7 (± 1.8)	6.3 (± 2.1)	4.8 (± 1.6) <sup>§</sup>	5.5 (± 0.8)
Any college	9.2 (± 1.9)	13.4 (± 1.8) <sup>§</sup>	7.1 (± 1.6) <sup>§</sup>	7.5 (± 2.2) <sup>§</sup>	10.4 (± 1.7) <sup>§</sup>	11.5 (± 2.0) <sup>§</sup>	8.5 (± 1.8) <sup>§</sup>	10.7 (± 0.8) <sup>§</sup>
<b>Yearly salary</b>								
<\$15,000 <sup>‡</sup>	7.3 (± 4.3)	7.3 (± 2.9)	2.5 (± 2.4)	2.6 (± 2.1)	2.5 (± 2.3)	7.0 (± 4.8)	4.4 (± 2.6)	5.5 (± 1.6)
\$15,000-\$34,999	4.9 (± 1.9)	9.8 (± 2.0)	3.7 (± 1.3)	2.9 (± 1.4)	6.9 (± 2.3) <sup>§</sup>	5.6 (± 1.7)	5.0 (± 1.5)	6.3 (± 0.8)
\$35,000-\$49,999	5.7 (± 2.6)	11.6 (± 3.0) <sup>§</sup>	4.1 (± 1.9)	3.7 (± 2.3)	6.6 (± 2.4) <sup>§</sup>	9.0 (± 3.0)	6.9 (± 2.8)	7.9 (± 1.2)
>\$50,000	11.2 (± 3.2)	14.9 (± 3.1) <sup>§</sup>	9.3 (± 2.7) <sup>§</sup>	13.3 (± 5.0) <sup>§</sup>	12.9 (± 2.3) <sup>§</sup>	12.7 (± 2.8) <sup>§</sup>	12.0 (± 3.9) <sup>§</sup>	12.7 (± 1.3) <sup>§</sup>
<b>Residential area</b>								
Urban <sup>‡</sup>	7.5 (± 1.5)	10.4 (± 1.3)	4.9 (± 1.2)	6.1 (± 1.7)	8.2 (± 1.1)	9.0 (± 1.4)	6.8 (± 1.3)	8.5 (± 0.6)
Suburban/small town	3.0 (± 3.1) <sup>§</sup>	10.9 (± 5.1)	6.3 (± 2.4)	3.3 (± 2.5)	—	4.6 (± 3.2) <sup>§</sup>	2.8 (± 1.8) <sup>§</sup>	5.6 (± 1.4) <sup>§</sup>
Rural	6.7 (± 3.4)	18.6 (± 12.0)	3.2 (± 3.1)	1.9 (± 1.7) <sup>§</sup>	—	0 <sup>§</sup>	5.1 (± 2.6)	4.8 (± 1.5) <sup>§</sup>
<b>Total</b>	7.1 (± 1.3)	10.6 (± 1.2)	5.1 (± 1.0)	4.8 (± 1.2)	8.2 (± 1.1)	8.6 (± 1.3)	5.9 (± 1.0)	8.0 (± 0.5)

\* Twelve standard food-safety questions were added to the 1995 BRFSS in Colorado, Florida, Missouri, New York, and Tennessee and to the 1996 BRFSS in Indiana and New Jersey. Two food-consumption questions were added to the 1996 BRFSS in South Dakota.

<sup>†</sup> Confidence interval.<sup>‡</sup> Referent group.<sup>§</sup> Significantly different from referent group,  $p < 0.05$ .

TABLE 8. Percentage of respondents who reported drinking raw milk during the previous 12 months, by demographic characteristics and state — food-safety questions, Behavioral Risk Factor Surveillance System (BRFSS), 1995 and 1996\*

	Colorado (n = 2,392)		Florida (n = 3,283)		Indiana (n = 2,186)		Missouri (n = 1,550)		New Jersey (n = 2,961)		New York (n = 2,465)		Tennessee (n = 2,009)		Total (n = 16,486)	
	%	(95% CI) <sup>†</sup>	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
<b>Sex</b>																
Male <sup>‡</sup>	2.0	(± 1.2)	1.1	(± 0.6)	1.5	(± 0.8)	2.2	(± 1.3)	1.6	(± 0.9)	1.7	(± 0.9)	1.9	(± 1.1)	1.6	(± 0.4)
Female	1.3	(± 0.7)	1.1	(± 0.6)	0.5	(± 0.4) <sup>§</sup>	2.1	(± 1.1)	0.6	(± 0.5)	1.1	(± 0.5)	1.5	(± 0.8)	1.3	(± 0.3) <sup>§</sup>
<b>Age (yrs)</b>																
18-29 <sup>‡</sup>	2.6	(± 2.0)	0.8	(± 0.8)	1.0	(± 1.0)	3.9	(± 2.4)	2.0	(± 1.9)	2.4	(± 1.6)	1.8	(± 1.3)	2.0	(± 0.7)
30-59	1.1	(± 0.6)	1.4	(± 0.6)	1.2	(± 0.7)	1.4	(± 0.9) <sup>§</sup>	0.8	(± 0.4)	0.3	(± 0.6)	2.0	(± 1.0)	1.3	(± 0.3)
≥60	2.2	(± 2.2)	0.9	(± 0.7)	0.6	(± 0.7)	2.4	(± 1.8)	1.0	(± 0.9)	1.6	(± 0.5) <sup>§</sup>	0.8	(± 0.9)	1.0	(± 0.3) <sup>§</sup>
<b>Race/Ethnicity</b>																
White <sup>‡</sup>	0.9	(± 0.5)	0.6	(± 0.3)	1.0	(± 0.5)	2.4	(± 0.9)	0.8	(± 0.5)	1.4	(± 0.6)	1.5	(± 0.7)	1.2	(± 0.2)
Black	3.2	(± 6.1)	2.6	(± 2.1)	0 <sup>§</sup>	—	0 <sup>§</sup>	—	1.2	(± 1.3)	0.5	(± 0.7)	3.2	(± 2.5)	1.4	(± 0.7)
Asian	21.2	(± 23.3)	4.5	(± 8.5)	0 <sup>§</sup>	—	0 <sup>§</sup>	—	4.1	(± 6.8)	1.4	(± 2.1)	0 <sup>§</sup>	—	2.9	(± 2.3)
Hispanic	3.1	(± 2.9)	2.7	(± 1.7) <sup>§</sup>	5.1	(± 7.1)	3.5	(± 6.8)	1.6	(± 1.6)	2.2	(± 2.1)	2.2	(± 4.1)	2.5	(± 1.0) <sup>§</sup>
<b>Education</b>																
Less than grade 12 <sup>‡</sup>	2.9	(± 2.3)	3.1	(± 1.9)	1.8	(± 1.7)	4.2	(± 3.3)	1.2	(± 1.1)	1.3	(± 1.2)	1.8	(± 1.4)	2.1	(± 0.7)
High school graduate	1.1	(± 0.8)	0.8	(± 0.6) <sup>§</sup>	1.2	(± 0.8)	0.9	(± 0.9)	1.2	(± 1.2)	1.6	(± 0.9)	1.7	(± 1.0)	1.2	(± 0.4) <sup>§</sup>
Any college	1.6	(± 1.0)	0.8	(± 0.4) <sup>§</sup>	0.6	(± 0.5)	2.6	(± 1.2)	1.0	(± 0.6)	1.3	(± 0.7)	1.7	(± 1.1)	1.2	(± 0.3) <sup>§</sup>
<b>Yearly salary</b>																
<\$15,000 <sup>‡</sup>	3.7	(± 3.6)	2.1	(± 1.4)	0	—	3.7	(± 2.7)	2.7	(± 3.3)	1.5	(± 1.4)	1.9	(± 1.5)	2.1	(± 0.8)
\$15,000-\$34,999	2.0	(± 1.3)	1.0	(± 0.7)	1.4	(± 0.9) <sup>§</sup>	2.9	(± 1.6)	1.0	(± 0.7)	1.5	(± 0.9)	2.1	(± 1.1)	1.6	(± 0.4)
\$35,000-\$49,999	0.7	(± 0.7)	0.9	(± 0.9)	1.0	(± 1.0) <sup>§</sup>	1.1	(± 1.3)	0.7	(± 0.7)	1.3	(± 1.1)	1.6	(± 1.7)	1.1	(± 0.5) <sup>§</sup>
≥\$50,000	0.3	(± 0.6)	0.4	(± 0.5) <sup>§</sup>	0.7	(± 0.7)	0.7	(± 1.1) <sup>§</sup>	1.2	(± 1.1)	0.9	(± 0.7)	2.5	(± 2.2)	0.9	(± 0.4) <sup>§</sup>
<b>Residential area</b>																
Urban <sup>‡</sup>	1.5	(± 0.8)	1.1	(± 0.4)	0	—	1.2	(± 0.8)	1.1	(± 0.5)	1.2	(± 0.5)	1.5	(± 0.8)	1.2	(± 0.2)
Suburban/small town	2.7	(± 2.5)	1.0	(± 1.3)	1.7	(± 1.3)	6.8	(± 4.0) <sup>§</sup>	—	—	3.8	(± 3.1) <sup>§</sup>	0.5	(± 0.5) <sup>§</sup>	2.6	(± 1.0) <sup>§</sup>
Rural	2.2	(± 1.5)	0 <sup>§</sup>	—	0.9	(± 0.5) <sup>§</sup>	1.9	(± 1.6)	—	—	0 <sup>§</sup>	—	4.5	(± 3.0)	2.1	(± 0.9)
<b>Total</b>	1.6	(± 0.7)	1.1	(± 0.4)	1.0	(± 0.5)	2.2	(± 0.8)	1.1	(± 0.5)	1.4	(± 0.5)	1.7	(± 0.7)	1.4	(± 0.2)

\*Twelve standard food-safety questions were added to the 1995 BRFSS in Colorado, Florida, Missouri, New York, and Tennessee and to the 1996 BRFSS in Indiana and New Jersey. Two food-consumption questions were added to the 1995 BRFSS in South Dakota.

<sup>†</sup>Confidence interval.<sup>‡</sup>Referent group.<sup>§</sup>Significantly different from referent group,  $p < 0.05$ .

TABLE 9. Percentage of respondents who reported that they usually did not wash their hands with soap and water after handling raw meat or chicken by demographic characteristics and state — food-safety questions, Behavioral Risk Factor Surveillance System (BRFSS), 1995 and 1996\*

	Colorado (n = 2,080)	Florida (n = 2,845)	Indiana (n = 1,919)	Missouri (n = 1,368)	New Jersey (n = 2,553)	New York (n = 1,984)	Tennessee (n = 1,696)	Total (n = 14,445)
	% (95% CI) <sup>†</sup>	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
<b>Sex<sup>‡</sup></b>								
Male <sup>‡</sup>	28.4 (± 4.2)	26.7 (± 3.1)	24.9 (± 3.4)	24.6 (± 4.0)	21.9 (± 3.0)	25.1 (± 3.7)	17.7 (± 3.1)	24.6 (± 1.8)
Female	17.7 (± 2.7) <sup>§</sup>	14.9 (± 1.8) <sup>§</sup>	11.3 (± 1.8) <sup>§</sup>	14.9 (± 2.6) <sup>§</sup>	12.1 (± 1.8) <sup>§</sup>	16.1 (± 2.2) <sup>§</sup>	12.6 (± 2.4) <sup>§</sup>	14.5 (± 0.9) <sup>§</sup>
<b>Age (yrs)</b>								
18-29 <sup>§</sup>	24.5 (± 5.8)	27.8 (± 4.7)	18.7 (± 4.3)	21.8 (± 6.0)	21.1 (± 5.0)	20.1 (± 4.6)	17.6 (± 4.4)	22.1 (± 2.1)
30-59	24.1 (± 3.2)	21.0 (± 2.3) <sup>§</sup>	17.8 (± 2.4)	19.5 (± 3.1)	15.7 (± 2.1)	21.8 (± 2.8)	15.7 (± 2.5)	19.8 (± 1.1)
≥60	13.7 (± 4.1) <sup>§</sup>	11.9 (± 2.5) <sup>§</sup>	12.5 (± 3.2) <sup>§</sup>	15.9 (± 4.3)	13.8 (± 3.2) <sup>§</sup>	13.7 (± 3.5) <sup>§</sup>	8.2 (± 3.1) <sup>§</sup>	12.9 (± 1.4) <sup>§</sup>
<b>Race/Ethnicity</b>								
White <sup>§</sup>	23.8 (± 2.8)	20.5 (± 1.9)	17.5 (± 1.9)	19.1 (± 2.5)	16.8 (± 2.0)	20.8 (± 2.3)	14.7 (± 2.0)	19.3 (± 0.9)
Black	8.6 (± 8.6) <sup>§</sup>	11.5 (± 3.8) <sup>§</sup>	10.6 (± 5.8) <sup>§</sup>	17.3 (± 8.3)	15.6 (± 5.2)	13.1 (± 4.2) <sup>§</sup>	12.7 (± 4.8)	13.1 (± 2.2) <sup>§</sup>
Asian/Pacific Islander	14.3 (± 17.0)	33.9 (± 22.6)	23.6 (± 31.1)	23.8 (± 35.4)	12.6 (± 9.9)	19.0 (± 10.3)	19.7 (± 33.6)	20.3 (± 7.4)
Hispanic	18.8 (± 6.1)	19.9 (± 4.6)	9.8 (± 8.6)	18.3 (± 19.0)	11.9 (± 5.1)	21.8 (± 9.4)	10.8 (± 11.8)	18.8 (± 3.6)
<b>Education</b>								
Less than grade 12 <sup>§</sup>	13.4 (± 5.2)	13.4 (± 3.9)	12.9 (± 4.2)	12.3 (± 5.9)	9.7 (± 4.0)	16.4 (± 4.3)	10.8 (± 3.5)	13.6 (± 1.9)
High school graduate	23.7 (± 4.7) <sup>§</sup>	18.9 (± 2.8) <sup>§</sup>	18.1 (± 3.2)	16.5 (± 3.7)	14.6 (± 2.7)	16.8 (± 3.6)	13.3 (± 3.0)	17.2 (± 1.4) <sup>§</sup>
Any college	23.7 (± 3.3) <sup>§</sup>	21.8 (± 2.3) <sup>§</sup>	17.2 (± 2.6)	22.6 (± 3.6) <sup>§</sup>	18.3 (± 2.4)	22.0 (± 2.8) <sup>§</sup>	17.4 (± 3.1) <sup>§</sup>	20.9 (± 1.2) <sup>§</sup>
<b>Yearly salary</b>								
<\$15,000 <sup>§</sup>	17.2 (± 6.0)	14.7 (± 4.0)	12.6 (± 4.5)	15.9 (± 5.3)	11.9 (± 5.4)	18.5 (± 5.9)	13.1 (± 4.6)	15.5 (± 2.2)
\$15,000-\$34,999	21.7 (± 3.9)	19.1 (± 2.6)	15.5 (± 3.0)	19.0 (± 3.5)	14.4 (± 3.3)	17.8 (± 3.4)	13.8 (± 2.8)	17.5 (± 1.3)
\$35,000-\$49,999	26.4 (± 5.6) <sup>§</sup>	23.2 (± 4.5) <sup>§</sup>	19.6 (± 3.9) <sup>§</sup>	21.0 (± 6.0)	18.7 (± 4.3)	21.7 (± 4.7)	17.3 (± 5.0)	21.3 (± 2.0) <sup>§</sup>
≥\$50,000	25.7 (± 5.6) <sup>§</sup>	24.8 (± 4.2) <sup>§</sup>	19.9 (± 4.0)	23.8 (± 6.6)	18.2 (± 2.9)	21.6 (± 4.4)	20.8 (± 5.7) <sup>§</sup>	22.8 (± 1.9) <sup>§</sup>
<b>Residential area</b>								
Urban <sup>§</sup>	22.8 (± 2.9)	20.3 (± 1.7)	16.0 (± 2.1)	19.6 (± 3.0)	16.2 (± 1.7)	19.7 (± 2.1)	15.5 (± 2.3)	18.9 (± 0.9)
Suburban/small town	23.1 (± 9.1)	11.7 (± 5.0) <sup>§</sup>	20.1 (± 4.4)	17.4 (± 5.4)	—	18.5 (± 6.8)	13.9 (± 4.2)	17.0 (± 2.4)
Rural	22.1 (± 5.4)	18.5 (± 11.6)	16.7 (± 7.3)	17.8 (± 4.8)	—	20.0 (± 24.1)	10.2 (± 4.3) <sup>§</sup>	17.0 (± 2.7)
<b>Total</b>	22.6 (± 2.5)	19.7 (± 1.7)	16.9 (± 1.8)	18.9 (± 2.3)	16.2 (± 1.7)	19.6 (± 2.0)	14.5 (± 1.8)	18.6 (± 0.8)

\* Twelve standard food-safety questions were added to the 1995 BRFSS in Colorado, Florida, Missouri, New York, and Tennessee and to the 1996 BRFSS in Indiana and New Jersey. Two food-consumption questions were added to the 1996 BRFSS in South Dakota.

<sup>†</sup> Confidence interval.

<sup>‡</sup> Referent group.

<sup>§</sup> Significantly different from referent group,  $p < 0.05$ .

TABLE 10. Percentage of respondents who reported that they usually did not wash a cutting board surface with soap or bleach after contact with raw meat or chicken, by demographic characteristics and state—food-safety questions, Behavioral Risk Factor Surveillance System (BRFSS), 1995 and 1996\*

	Colorado (n = 2,002)		Florida (n = 2,756)		Indiana (n = 1,874)		Missouri (n = 1,314)		New Jersey (n = 2,486)		New York (n = 1,955)		Tennessee (n = 977)		Total (n = 13,364)	
	%	(95% CI) <sup>†</sup>	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
<b>Sex</b>																
Male <sup>‡</sup>	38.0	(± 4.7)	26.5	(± 3.0)	28.8	(± 3.7)	27.9	(± 4.7)	22.4	(± 3.0)	25.3	(± 3.7)	25.3	(± 5.1)	26.7	(± 1.5)
Female	20.2	(± 2.8) <sup>§</sup>	13.9	(± 2.0) <sup>§</sup>	13.1	(± 2.0) <sup>§</sup>	15.3	(± 2.7) <sup>§</sup>	11.3	(± 1.7) <sup>§</sup>	15.1	(± 2.2) <sup>§</sup>	15.9	(± 3.2) <sup>§</sup>	14.4	(± 1.0) <sup>§</sup>
<b>Age (yrs)</b>																
18-29 <sup>§</sup>	32.0	(± 6.6)	29.1	(± 4.9)	27.3	(± 5.1)	32.5	(± 7.2)	18.4	(± 4.4)	24.3	(± 5.1)	23.2	(± 6.7)	26.3	(± 2.3)
30-59	29.2	(± 3.4)	19.2	(± 2.3) <sup>§</sup>	20.8	(± 2.7) <sup>§</sup>	19.0	(± 3.2) <sup>§</sup>	15.8	(± 2.0)	19.2	(± 2.6)	21.1	(± 3.8)	19.7	(± 1.1) <sup>§</sup>
≥60	18.5	(± 4.9) <sup>§</sup>	12.0	(± 2.6) <sup>§</sup>	7.9	(± 2.5) <sup>§</sup>	13.9	(± 4.4) <sup>§</sup>	14.0	(± 3.3)	13.7	(± 3.8) <sup>§</sup>	10.1	(± 4.3) <sup>§</sup>	12.8	(± 1.5) <sup>§</sup>
<b>Race/Ethnicity</b>																
White <sup>§</sup>	29.2	(± 3.1)	19.4	(± 2.0)	19.8	(± 2.1)	20.1	(± 2.6)	15.9	(± 1.8)	19.0	(± 2.3)	18.6	(± 3.1)	19.5	(± 1.0)
Black	16.0	(± 14.2)	16.3	(± 5.3)	16.9	(± 7.3)	22.9	(± 9.0)	15.1	(± 4.9)	15.5	(± 4.8)	21.1	(± 8.0)	16.7	(± 2.6) <sup>§</sup>
Asian/Pacific Islander	27.9	(± 24.6)	42.4	(± 22.3) <sup>§</sup>	16.6	(± 23.7)	37.8	(± 36.7)	13.6	(± 8.7)	23.8	(± 12.0)	54.3	(± 47.1)	26.2	(± 8.4)
Hispanic	24.0	(± 6.8)	17.2	(± 4.9)	17.5	(± 13.3)	24.6	(± 20.9)	17.6	(± 6.3)	23.5	(± 9.7)	26.8	(± 24.0)	20.3	(± 3.8)
<b>Education</b>																
Less than grade 12 <sup>§</sup>	25.5	(± 7.3)	14.8	(± 4.7)	14.2	(± 5.0)	12.3	(± 6.2)	12.6	(± 4.8)	13.6	(± 4.1)	14.1	(± 5.2)	14.5	(± 2.1)
High school graduate	22.0	(± 4.4)	18.7	(± 2.9)	19.7	(± 3.2)	16.6	(± 3.8)	15.2	(± 2.8)	18.4	(± 3.8)	19.4	(± 4.8)	18.3	(± 1.5) <sup>§</sup>
Any college	31.5	(± 3.7)	20.3	(± 2.3) <sup>§</sup>	21.0	(± 2.9)	25.7	(± 3.9) <sup>§</sup>	16.9	(± 2.2)	21.1	(± 2.8) <sup>§</sup>	22.2	(± 4.5) <sup>§</sup>	21.5	(± 1.1) <sup>§</sup>
<b>Yearly salary</b>																
<\$15,000 <sup>§</sup>	22.8	(± 6.7)	15.4	(± 4.8)	16.1	(± 5.3)	16.2	(± 5.6)	10.0	(± 4.6)	17.9	(± 5.9)	15.9	(± 7.1)	16.3	(± 2.5)
\$15,000-\$34,999	27.2	(± 4.4)	18.3	(± 2.7)	18.3	(± 3.2)	21.7	(± 4.1)	15.6	(± 3.0) <sup>§</sup>	18.0	(± 3.5)	20.8	(± 4.6)	19.0	(± 1.4)
\$35,000-\$49,999	29.4	(± 5.8)	21.7	(± 4.5)	23.9	(± 4.4) <sup>§</sup>	20.3	(± 4.8) <sup>§</sup>	21.0	(± 4.8) <sup>§</sup>	23.5	(± 5.3)	21.0	(± 6.8)	22.8	(± 2.1)
≥\$50,000	32.5	(± 6.0) <sup>§</sup>	23.9	(± 4.1) <sup>§</sup>	20.6	(± 4.3)	26.4	(± 7.4) <sup>§</sup>	14.8	(± 2.6)	22.0	(± 4.2)	25.0	(± 7.7)	22.0	(± 1.9) <sup>§</sup>
<b>Residential area</b>																
Urban <sup>§</sup>	28.3	(± 3.2)	19.6	(± 1.8)	19.6	(± 2.3)	21.3	(± 3.2)	15.9	(± 1.6)	18.8	(± 2.1)	21.0	(± 3.6)	19.5	(± 0.9)
Suburban/small town	27.4	(± 9.3)	12.0	(± 5.5) <sup>§</sup>	17.7	(± 4.3)	16.2	(± 5.6)	—	—	22.0	(± 8.4)	14.6	(± 6.1)	17.6	(± 2.9)
Rural	27.6	(± 6.2)	17.1	(± 12.3)	24.8	(± 6.7)	21.6	(± 5.4)	—	—	23.0	(± 22.1)	18.7	(± 8.5)	22.4	(± 3.2)
<b>Total</b>	28.2	(± 2.7)	19.1	(± 1.7)	19.5	(± 2.0)	20.6	(± 2.5)	15.9	(± 1.6)	19.1	(± 2.0)	19.6	(± 3.0)	19.5	(± 0.9)

\* Twelve standard food-safety questions were added to the 1995 BRFSS in Colorado, Florida, Missouri, New York, and Tennessee and to the 1996 BRFSS in Indiana and New Jersey. Two food-consumption questions were added to the 1995 BRFSS in South Dakota.

<sup>†</sup> Confidence interval.

<sup>‡</sup> Referent group.

<sup>§</sup> Significantly different from referent group,  $p < 0.05$ .

TABLE 11. Percentage of respondents who reported that they have seen safe food-handling label information on packages of uncooked meat or poultry, by demographic characteristic and state — food-safety questions, Behavioral Risk Factor Surveillance System (BRFSS), 1995 and 1996\*

	Colorado (n = 2,349)		Florida (n = 3,204)		Indiana (n = 2,133)		Missouri (n = 1,500)		New Jersey (n = 2,877)		New York (n = 2,416)		Tennessee (n = 1,987)		Total (n = 16,466)	
	%	(95% CI) <sup>†</sup>	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
<b>Sex</b>																
Male <sup>‡</sup>	41.2	(± 4.0)	41.9	(± 2.9)	33.1	(± 3.3)	46.5	(± 4.6)	34.6	(± 3.1)	28.3	(± 3.2)	39.2	(± 3.9)	36.1	(± 1.4)
Female	53.9	(± 3.4)	61.0	(± 2.5)	56.2	(± 3.0)	62.1	(± 3.5)	56.1	(± 2.8)	43.5	(± 2.9)	57.3	(± 3.2)	53.9	(± 1.3)
<b>Age (yrs)</b>																
18-29 <sup>‡</sup>	44.0	(± 6.3)	48.6	(± 4.8)	39.3	(± 5.0)	46.9	(± 6.6)	42.0	(± 5.5)	32.8	(± 4.9)	43.7	(± 5.7)	40.9	(± 2.3)
30-59	48.2	(± 3.4)	54.5	(± 2.7)	49.0	(± 3.0)	57.3	(± 3.9)	47.8	(± 2.7)	38.1	(± 2.9)	52.0	(± 3.3)	47.6	(± 1.3)
≥60	50.3	(± 5.3)	49.4	(± 3.4)	42.1	(± 4.6)	55.1	(± 5.7)	44.5	(± 4.3)	36.0	(± 4.6)	45.5	(± 4.9)	44.6	(± 1.9)
<b>Race/Ethnicity</b>																
White <sup>‡</sup>	49.4	(± 2.9)	54.0	(± 2.2)	44.8	(± 2.5)	55.5	(± 3.2)	47.3	(± 2.5)	37.2	(± 2.5)	48.9	(± 2.7)	46.8	(± 1.1)
Black	43.8	(± 16.4)	47.5	(± 6.8)	46.8	(± 9.3)	46.5	(± 9.8)	42.6	(± 6.1)	36.0	(± 6.0)	47.0	(± 6.8)	42.1	(± 3.2)
Asian/Pacific Islander	33.5	(± 25.5)	44.8	(± 21.1)	56.8	(± 29.0)	17.4	(± 22.7)	30.7	(± 12.4)	16.7	(± 8.3)	34.9	(± 31.1)	24.5	(± 6.6)
Hispanic	40.8	(± 7.2)	43.1	(± 5.5)	44.2	(± 14.9)	65.9	(± 17.7)	41.0	(± 7.3)	40.3	(± 7.8)	67.0	(± 26.5)	42.6	(± 3.6)
<b>Education</b>																
Less than grade 12 <sup>‡</sup>	43.3	(± 7.3)	40.3	(± 5.3)	36.7	(± 5.7)	50.9	(± 8.4)	39.5	(± 6.7)	28.8	(± 4.5)	42.2	(± 5.3)	36.7	(± 2.4)
High school graduate	46.2	(± 4.8)	53.3	(± 3.4)	45.7	(± 3.7)	56.4	(± 4.8)	45.7	(± 3.8)	38.0	(± 4.2)	49.1	(± 4.0)	46.9	(± 1.7)
Any college	49.1	(± 3.5)	53.9	(± 2.7)	47.5	(± 3.2)	54.6	(± 4.1)	46.9	(± 2.8)	38.3	(± 3.1)	51.5	(± 3.9)	47.1	(± 1.4)
<b>Yearly salary</b>																
<\$15,000 <sup>‡</sup>	44.4	(± 7.5)	43.4	(± 5.3)	43.8	(± 6.7)	50.9	(± 6.7)	44.8	(± 8.0)	32.0	(± 6.8)	45.1	(± 6.8)	41.7	(± 2.9)
\$15,000-\$34,999	50.3	(± 4.4)	53.6	(± 3.0)	45.7	(± 3.9)	57.3	(± 4.7)	43.8	(± 4.1)	37.9	(± 4.0)	48.8	(± 3.8)	47.2	(± 1.6)
\$35,000-\$49,999	43.3	(± 5.9)	58.2	(± 4.9)	48.4	(± 5.0)	55.6	(± 7.0)	45.6	(± 5.3)	41.8	(± 5.6)	53.4	(± 6.4)	49.2	(± 2.4)
≥\$50,000	49.5	(± 5.6)	52.8	(± 4.6)	43.4	(± 4.5)	53.1	(± 7.4)	47.6	(± 3.6)	38.9	(± 4.3)	51.3	(± 6.2)	45.9	(± 2.0)
<b>Residential area</b>																
Urban <sup>‡</sup>	47.1	(± 3.0)	52.1	(± 2.0)	46.3	(± 2.6)	53.5	(± 3.6)	45.8	(± 2.2)	35.8	(± 2.3)	48.7	(± 3.1)	45.0	(± 1.1)
Suburban/small town	46.2	(± 9.1)	53.1	(± 7.3)	42.6	(± 5.2)	57.8	(± 8.0)	—	—	42.2	(± 7.2)	50.8	(± 6.2)	48.0	(± 3.0)
Rural	50.2	(± 6.4)	41.7	(± 14.1)	41.4	(± 9.0)	56.1	(± 6.5)	—	—	48.5	(± 29.2)	46.7	(± 6.4)	50.9	(± 3.6)
<b>Total</b>	47.6	(± 2.6)	52.0	(± 1.9)	45.2	(± 2.3)	54.6	(± 3.0)	45.8	(± 2.2)	36.4	(± 2.2)	48.8	(± 2.5)	45.4	(± 1.2)

\* Twelve standard food-safety questions were added to the 1995 BRFSS in Colorado, Florida, Missouri, New York, and Tennessee and to the 1996 BRFSS in Indiana and New Jersey. Two food-consumption questions were added to the 1996 BRFSS in South Dakota.

<sup>‡</sup> Confidence interval.

<sup>§</sup> Referent group.

<sup>†</sup> Significantly different from referent group,  $p < 0.05$ .

TABLE 12. Percentage of respondents who remembered reading safe food-handling label information, among persons who remembered seeing label information on packets of meat/poultry, by demographic characteristics and state — food safety questions, Behavioral Risk Factor Surveillance System (BRFSS), 1995 and 1996\*

	Colorado (n = 1,114)	Florida (n = 1,645)	Indiana (n = 956)	Missouri (n = 832)	New Jersey (n = 1,354)	New York (n = 905)	Tennessee (n = 966)	Total (n = 7,772)
	% (95% CI)†	% (95% CI)†	% (95% CI)†	% (95% CI)†	% (95% CI)†	% (95% CI)†	% (95% CI)†	% (95% CI)†
<b>Sex</b>								
Male‡	68.3 (± 5.6)	69.4 (± 4.4)	58.1 (± 6.0)	63.5 (± 6.4)	67.5 (± 5.1)	72.3 (± 5.9)	75.7 (± 5.3)	69.7 (± 2.2)
Female	76.6 (± 3.9)§	80.0 (± 2.8)§	80.9 (± 3.3)§	82.0 (± 3.5)§	82.9 (± 2.9)§	85.0 (± 3.2)§	87.4 (± 2.9)§	82.4 (± 1.3)§
<b>Age (yrs)</b>								
18-29†	63.7 (± 9.1)	72.1 (± 6.5)	75.6 (± 6.8)	74.3 (± 8.4)	66.7 (± 8.2)	68.2 (± 8.3)	81.0 (± 6.7)	71.3 (± 3.2)
30-59	75.7 (± 3.9)§	77.0 (± 3.1)	74.3 (± 4.1)	75.6 (± 4.4)	78.9 (± 3.1)§	84.1 (± 3.4)§	84.8 (± 3.3)	79.3 (± 1.4)§
≥60	75.1 (± 6.4)§	76.6 (± 4.4)	66.4 (± 6.9)	72.1 (± 6.6)	82.0 (± 4.9)§	81.7 (± 5.9)§	79.8 (± 5.6)	77.3 (± 2.3)§
<b>Race/Ethnicity</b>								
White‡	72.9 (± 3.5)	79.6 (± 2.5)	73.6 (± 3.3)	75.6 (± 3.6)	77.8 (± 2.9)	81.7 (± 3.3)	83.5 (± 3.0)	78.7 (± 1.2)
Black	99.6 (± 0.9)§	64.4 (± 9.5)§	75.8 (± 11.0)	62.1 (± 14.8)§	77.9 (± 7.7)	78.6 (± 8.1)	81.0 (± 7.2)	74.1 (± 4.3)§
Asian/Pacific Islander	49.9 (± 48.0)	50.1 (± 34.4)	16.1 (± 30.9)§	20.4 (± 40.9)§	73.7 (± 19.8)	97.3 (± 5.4)§	100.0 (± 5.4)§	74.3 (± 13.6)§
Hispanic	73.4 (± 9.9)	60.7 (± 8.8)	56.3 (± 22.8)	74.4 (± 20.4)	71.0 (± 11.6)	69.0 (± 11.5)§	84.1 (± 17.9)	66.7 (± 5.3)§
<b>Education</b>								
Less than grade 12†	65.9 (± 10.8)	70.2 (± 8.1)	62.3 (± 10.0)	71.1 (± 9.4)	74.7 (± 10.7)	81.9 (± 7.5)	79.2 (± 7.0)	74.4 (± 3.5)
High school graduate	74.8 (± 6.1)	74.2 (± 4.1)§	70.8 (± 5.1)	75.3 (± 5.7)	77.0 (± 4.4)	79.7 (± 5.7)	83.7 (± 4.1)	76.5 (± 2.1)
Any college	73.5 (± 4.1)	78.0 (± 3.1)	76.9 (± 4.1)§	74.5 (± 4.8)	77.9 (± 3.4)	80.2 (± 3.9)	84.0 (± 3.9)	78.3 (± 1.6)§
<b>Yearly salary</b>								
<\$15,000†	60.1 (± 10.7)	75.4 (± 7.0)	73.5 (± 9.3)	67.1 (± 12.9)	80.6 (± 7.9)	80.6 (± 7.9)	82.6 (± 7.5)	75.5 (± 3.4)
\$15,000-\$34,999	74.0 (± 5.3)§	74.6 (± 4.0)	70.2 (± 5.4)	78.2 (± 4.9)	77.4 (± 5.6)	77.4 (± 4.2)	82.4 (± 4.2)	75.7 (± 2.3)
\$35,000-\$49,999	74.3 (± 7.6)§	77.4 (± 5.3)	75.7 (± 6.1)	82.5 (± 5.7)	90.6 (± 4.6)§	90.6 (± 4.6)§	88.7 (± 5.3)	82.4 (± 2.0)§
≥\$50,000	74.5 (± 6.3)§	80.7 (± 4.8)	73.4 (± 6.2)	78.6 (± 4.0)	77.9 (± 5.8)	81.7 (± 5.8)	86.0 (± 7.6)	77.7 (± 2.4)
<b>Residential area</b>								
Urban‡	72.4 (± 3.8)	75.4 (± 2.6)	73.5 (± 3.6)	74.2 (± 4.3)	77.3 (± 2.6)	80.5 (± 3.1)	83.3 (± 3.2)	77.2 (± 1.3)
Suburban/small town	73.1 (± 11.3)	81.7 (± 8.4)	71.4 (± 6.8)	76.7 (± 9.1)	—	75.5 (± 10.8)	82.2 (± 6.5)	77.1 (± 3.7)
Rural	75.8 (± 7.6)	82.6 (± 11.7)	70.4 (± 13.7)	74.5 (± 7.4)	—	100.0 (± 10.0)	82.6 (± 8.6)	77.7 (± 4.2)
<b>Total</b>	73.0 (± 3.3)	76.0 (± 2.4)	72.9 (± 3.1)	74.5 (± 3.4)	77.3 (± 2.6)	80.4 (± 2.9)	83.0 (± 2.7)	77.2 (± 1.2)

\* Twelve standard food-safety questions were added to the 1995 BRFSS in Colorado, Florida, Missouri, New York, and Tennessee and to the 1996 BRFSS in Indiana and New Jersey. Two food-consumption questions were added to the 1996 BRFSS in South Dakota.

† Confidence interval.

‡ Referent group.

§ Significantly different from referent group,  $p < 0.05$ .



TABLE 13. Percentage of respondents who reported changing their food-preparation behaviors because of safe food-handling labels on packages of uncooked meat and poultry, among persons who remembered seeing label information, by demographic characteristics and state — food-safety questions, Behavioral Risk Factor Surveillance System (BRFSS), 1995 and 1996\*

	Colorado (n = 809)		Florida (n = 1,264)		Indiana (n = 701)		Missouri (n = 625)		New Jersey (n = 1,044)		New York (n = 734)		Tennessee (n = 799)		Total (n = 5,976)	
	%	(95% CI) <sup>†</sup>	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
<b>Sex</b>																
Male <sup>‡</sup>	26.4	(± 6.5)	34.3	(± 5.4)	34.0	(± 7.2)	27.2	(± 7.5)	42.0	(± 6.5)	43.0	(± 8.0)	44.0	(± 6.5)	37.2	(± 2.9)
Female	34.0	(± 5.0)	34.7	(± 3.4)	32.8	(± 4.4)	27.5	(± 4.4)	34.2	(± 3.9) <sup>§</sup>	41.9	(± 4.6)	43.9	(± 4.6)	36.5	(± 1.8)
<b>Age (yrs)</b>																
18-29 <sup>§</sup>	43.1	(± 11.4)	41.2	(± 7.8)	38.0	(± 8.8)	29.6	(± 10.5)	37.6	(± 9.4)	45.5	(± 9.5)	52.9	(± 8.5)	41.8	(± 3.8)
30-59	28.2	(± 4.8) <sup>§</sup>	34.4	(± 3.9)	32.2	(± 4.8)	29.0	(± 5.1)	37.9	(± 4.3)	41.4	(± 5.2)	42.2	(± 4.9) <sup>§</sup>	36.4	(± 2.0) <sup>§</sup>
≥60	28.5	(± 8.7) <sup>§</sup>	31.1	(± 5.3) <sup>§</sup>	30.9	(± 8.1)	20.0	(± 6.1)	33.1	(± 6.7)	41.7	(± 8.8)	41.4	(± 8.3)	33.5	(± 3.1) <sup>§</sup>
<b>Race/Ethnicity</b>																
White <sup>§</sup>	27.7	(± 4.2)	33.3	(± 3.1)	31.8	(± 3.9)	26.5	(± 4.0)	33.5	(± 3.6)	39.2	(± 4.6)	42.2	(± 3.9)	34.4	(± 1.5)
Black	59.0	(± 24.4) <sup>§</sup>	46.6	(± 11.3) <sup>§</sup>	48.9	(± 14.3) <sup>§</sup>	36.1	(± 15.2)	52.8	(± 10.8) <sup>§</sup>	46.1	(± 11.6)	53.3	(± 11.2)	47.9	(± 5.6) <sup>§</sup>
Asian/Pacific Islander	100.0 <sup>§</sup>	—	28.8	(± 37.9)	0 <sup>§</sup>	—	0 <sup>§</sup>	—	27.5	(± 20.2)	36.7	(± 24.9)	23.9	(± 13.3)	32.6	(± 15.4)
Hispanic	46.2	(± 12.7)	38.4	(± 11.5)	62.7	(± 26.6) <sup>§</sup>	34.1	(± 29.9)	61.0	(± 12.6) <sup>§</sup>	60.0	(± 13.6) <sup>§</sup>	72.3	(± 25.9) <sup>§</sup>	50.5	(± 6.5) <sup>§</sup>
<b>Education</b>																
Less than grade 12 <sup>§</sup>	47.9	(± 13.2)	43.7	(± 9.7)	48.3	(± 12.0)	40.1	(± 12.7)	42.4	(± 12.7)	52.0	(± 10.4)	50.4	(± 9.2)	47.5	(± 4.7)
High school graduate	33.4	(± 7.5)	38.4	(± 5.0)	34.0	(± 6.2) <sup>§</sup>	29.9	(± 6.3)	38.2	(± 6.0)	44.5	(± 8.3)	46.9	(± 6.0)	39.1	(± 2.7) <sup>§</sup>
Any college	27.2	(± 5.0) <sup>§</sup>	31.0	(± 3.8) <sup>§</sup>	29.6	(± 4.9) <sup>§</sup>	22.6	(± 5.1) <sup>§</sup>	35.2	(± 4.3)	38.2	(± 5.3) <sup>§</sup>	38.9	(± 5.5) <sup>§</sup>	33.0	(± 2.0) <sup>§</sup>
<b>Yearly salary</b>																
<\$15,000 <sup>§</sup>	47.3	(± 12.8)	44.4	(± 8.4)	32.0	(± 11.3)	27.5	(± 9.0)	44.7	(± 14.5)	47.6	(± 12.2)	55.6	(± 10.8)	42.8	(± 4.5)
\$15,000-\$34,999	34.1	(± 6.8)	32.9	(± 4.7) <sup>§</sup>	39.3	(± 6.7)	24.5	(± 5.9)	40.6	(± 6.6)	41.5	(± 7.8)	48.4	(± 6.0)	37.1	(± 2.7) <sup>§</sup>
\$35,000-\$49,999	32.5	(± 6.8)	39.0	(± 6.8)	28.6	(± 7.1)	26.7	(± 8.7)	37.6	(± 8.4)	36.1	(± 8.4)	36.1	(± 8.3)	35.9	(± 3.4) <sup>§</sup>
≥\$50,000	22.3	(± 6.9) <sup>§</sup>	33.2	(± 6.2) <sup>§</sup>	30.3	(± 7.2)	25.8	(± 9.9)	33.8	(± 5.3)	41.8	(± 7.7)	40.7	(± 9.8) <sup>§</sup>	34.8	(± 3.1) <sup>§</sup>
<b>Residential area</b>																
Urban <sup>§</sup>	31.9	(± 4.7)	35.2	(± 3.1)	33.3	(± 4.3)	27.4	(± 4.6)	36.7	(± 3.4)	43.5	(± 4.4)	41.5	(± 4.3)	37.3	(± 1.7)
Suburban/small town	28.2	(± 14.4)	25.9	(± 10.4)	29.8	(± 8.1)	27.5	(± 10.6)	—	—	26.3	(± 10.8) <sup>§</sup>	50.3	(± 9.2)	31.8	(± 4.4) <sup>§</sup>
Rural	27.7	(± 8.9)	39.0	(± 20.6)	42.9	(± 15.5)	27.2	(± 9.2)	—	—	41.0	(± 38.9)	48.7	(± 10.9)	35.3	(± 5.5)
<b>Total</b>	<b>31.0</b>	<b>(± 4.0)</b>	<b>34.6</b>	<b>(± 2.9)</b>	<b>33.1</b>	<b>(± 3.7)</b>	<b>27.3</b>	<b>(± 3.9)</b>	<b>36.7</b>	<b>(± 3.4)</b>	<b>42.3</b>	<b>(± 4.1)</b>	<b>44.0</b>	<b>(± 3.7)</b>	<b>36.7</b>	<b>(± 1.5)</b>

\* Twelve standard food-safety questions were added to the 1995 BRFSS in Colorado, Florida, Missouri, New York, and Tennessee and to the 1996 BRFSS in Indiana and New Jersey. Two food-consumption questions were added to the 1996 BRFSS in South Dakota.

<sup>†</sup> Confidence interval.

<sup>‡</sup> Referent group.

<sup>§</sup> Significantly different from referent group,  $p < 0.05$ .



## Appendix

### STATE-ADDED FOOD-SAFETY QUESTIONS

1. After handling raw meat or chicken in the kitchen, which of the following best describes what you usually do next?

Do you:

- |   |   |
|---|---|
| a. Continue cooking   | 1 |
| b. Rinse and/or wipe your hands, then continue cooking        | 2 |
| c. Wash your hands with soap and water, then continue cooking | 3 |
| or  |   |
| d. You don't handle uncooked meat or chicken                  | 4 |
| Other   | 5 |
| don't know/not sure   | 7 |
| Refused   | 9 |

2. After you have used a cutting board, counter top, or other surface for cutting raw meat or chicken, which of the following best describes what you usually do next?

Do you:

- |  |   |
|--|---|
| a. Continue using the surface as is                                      | 1 |
| b. Rinse and/or wipe the surface, then continue cooking                  | 2 |
| c. Wash the surface with soap or bleach and water, then continue cooking | 3 |
| or   |   |
| d. You don't cut raw meat or chicken                                     | 4 |
| Other  | 5 |
| Don't know/not sure  | 7 |
| Refused  | 9 |

These next questions are about food which you may eat or drink. I am going to name several different food items. Thinking over the past 12 months, please tell me how often you ate or drank each one; for example, twice a week, three times a month, and so forth. Include all the foods you ate or drank, both at home and away from home.

3. In the past 12 months, how often did you eat vegetables that you or someone else canned at home, such as asparagus, corn, or tomato sauces?

- |                     |     |
|---------------------|-----|
| a. Per day          | 1__ |
| b. Per week         | 2__ |
| c. Per month        | 3__ |
| d. Per year         | 4__ |
| e. Never            | 555 |
| Don't know/not sure | 777 |
| Refused             | 999 |

4. In the past 12 months, how often did you eat hamburgers, both at home and away from home?
- |                     |     |
|---------------------|-----|
| a. Per day          | 1__ |
| b. Per week         | 2__ |
| c. Per month        | 3__ |
| d. Per year         | 4__ |
| e. Never            | 555 |
| Don't know/not sure | 777 |
| Refused             | 999 |
5. In the past 12 months, how often did you eat hamburgers that were still pink or red on the inside, both at home and away from home?
- |                     |     |
|---------------------|-----|
| a. Per day          | 1__ |
| b. Per week         | 2__ |
| c. Per month        | 3__ |
| d. Per year         | 4__ |
| e. Never            | 555 |
| Don't know/not sure | 777 |
| Refused             | 999 |
6. In the past 12 months, how often did you eat eggs which were soft-boiled, soft-poached, loosely scrambled, or lightly fried with a runny yolk, both at home and away from home?
- |                     |     |
|---------------------|-----|
| a. Per day          | 1__ |
| b. Per week         | 2__ |
| c. Per month        | 3__ |
| d. Per year         | 4__ |
| e. Never            | 555 |
| Don't know/not sure | 777 |
| Refused             | 999 |
7. In the past 12 months, how often did you eat raw oysters, at home and away from home?
- |                     |     |
|---------------------|-----|
| a. Per day          | 1__ |
| b. Per week         | 2__ |
| c. Per month        | 3__ |
| d. Per year         | 4__ |
| e. Never            | 555 |
| Don't know/not sure | 777 |
| Refused             | 999 |

8. In the past 12 months, did you drink any unpasteurized milk, also known as "raw milk"?
- |                     |     |
|---------------------|-----|
| a. Yes              | 1   |
| b. No               | 2   |
| Don't know/not sure | 777 |
| Refused             | 999 |

Now think a moment about purchasing meat at the grocery store. Since the spring of 1994, packages of uncooked meat and poultry at the grocery store have had new labeling information. Meat and poultry labels now include new pictures and written information.

9. Have you seen this information?
- |                     |   |
|---------------------|---|
| a. Yes              | 1 |
| b. No               | 2 |
| Don't know/not sure | 7 |
| Refused             | 9 |
10. Do you remember reading anything in the new labeling about safe handling of raw meat and poultry?
- |                     |   |
|---------------------|---|
| a. Yes              | 1 |
| b. No               | 2 |
| Don't know/not sure | 7 |
| Refused             | 9 |
11. Has the new labeling information on raw meat and poultry changed the way you prepare these products?
- |                     |   |
|---------------------|---|
| a. Yes              | 1 |
| b. No               | 2 |
| Don't know/not sure | 7 |
| Refused             | 9 |
12. In the past month, were you ill with diarrhea lasting at least two days, with at least three loose stools on one of those days?
- |                     |   |
|---------------------|---|
| a. Yes              | 1 |
| b. No               | 2 |
| Don't know/not sure | 7 |
| Refused             | 9 |







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